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UNITED STATES DEPARTMENT OF AGRICULTURE
Northeastern Region
Plant Genetics and Germplasm Institute
Vegetable Laboratory

Beltsville, Maryland

NATIONAL POTATO-BREEDING PROGRAM, 1977

Edited by
Raymon E. Webb

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(Forty-eighth Annual Report by Cooperators)
Agricultural Research Center
Beltsville, Maryland

April 1978

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PGGI 78/4

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BELTSVILLE AGRICULTURAL RESEARCH CENTER (BARC) BELTSVILLE, MARYLAND, AND CHAPMAN AND AROOSTOOK FARMS, PRESQUE ISLE, MAINE

Raymon E. Webb and Phil Baum (BARC) and
David Wilson (Presque Isle, Maine)

BARC

Breeding and Evaluation: One hundred eighty-one parental clones and varieties possessing a diversity of desired economic factors were included in the breeding block. Six hundred eighty-eight seed lines from selective matings were obtained. One hundred sixty-eight seed lines were selected for greenhouse seedling tuber production. Approximately 90,000 seedling tubers were produced for distribution to cooperators. Approximately 250 clones were evaluated for resistance to viruses A, X, and Y.

Distribution of Materials: Distribution of true seed, seedling tubers, advanced selections and varieties to domestic and foreign cooperators are given in Tables 1, 2, and 3.

PRESQUE ISLE

Planting began May 18 under favorable weather conditions and continued for the next 18 days. Rainfall was adequate during the growing season but excessive during the harvest. Temperature was somewhat below normal throughout the growing and harvest periods (Table 4).

CHAPMAN FARM

Approximately 18,200 seedling tubers representing 82 parental combinations from BARC were planted on Chapman Farm for selection purposes. Approximately 1,650 12-hill plots were grown from the 1975 seedling tuber planting. Four hundred thirty 60-hill plots were grown from the 1975 12-hill lots for further selection and evaluation. Clones B6969-2, B6987-184, and B7583-6 were increased for grower trials. Clones B6987-29 and B7147-8 were increased for release as varieties in 1978.

AROOSTOOK FARM

Currently grown varieties (40) and a collection of older American varieties (101) were grown for either research purposes or maintenance and distribution. Approximately 150 breeding lines possessing specific genetic characteristics were grown for distribution and breeding. All yield and disease evaluation trials (see report by James Frank, et. al., Maine) were grown on either Aroostook or the adjacent Peter's Farm.

Experimental design for all yield trials was a randomized block with four replication. All round white tuber trials received 150 pounds of NPK per acre and the russet types received 180 pounds of NPK banded with a 2-row planter. Clones were hand planted in 25-hill plots with 9 inches between seedpieces. Cultural methods and materials for weed, insect, and disease control were according to local recommendations. Rainfall and temperature during the season are given in Table 4. At

harvest, all entries were graded and samples had been selected for specific gravity and quality evaluations. Specific gravity was determined by the air and water method. After specific gravities were determined, the samples were divided and placed in 50°F and 40°F storage at 90 percent relative humidity.

Samples were fried after 4 months of storage. One set of samples was fried directly from 50°F storage. Because of the poor chip color of most of the entries from 50°F storage, only a few entries were fried direct from 40°F storage.

Potato chips were made from each sample by cutting the tubers in half and taking a 1/16-inch thick slice from each tuber with a rotary food slicer. Slices were rinsed in water and placed on paper towels to remove excess water. Chips were then fried at 340°F in Primex vegetable shortening until bubbling ceased.

A french fry plug 3/8-inch in diameter was cut from each half of the tubers in the sample. After plugs were trimmed, rinsed, and excess water removed, they were fried at 365°F in Primex shortening for 5 minutes.

Each potato chip and french fry was classified after frying into color classes. Chip classes ranged from 1 = very light to 10 = very dark. French fry classes ranged from 1 = very light to 5 = very dark. Weighted averages were calculated by multiplying the number of chips or fries in each color class by the color class, totaled, and divided by the number of chips or french fries in each sample. Color ratings were made using the PCII reference color chart 1206-U.

After color classification, each french fry plug was broken open and internal texture classified as 1 = mealy, 2 = intermediate, or 3 = soggy and a weighted texture index calculated.

SUMMARY

Clones B6987-29 (Belchip) and B7147-8 (BelRus) are scheduled to be released as varieties in early 1978. Seed distribution is to be done following the harvest in September. Clones B6969-2, B6987-184, and B7583-6 (russet) are on seed increase and in interregional grower evaluation trials. Clones B7516-7, -9, B7859-2, B8392-5, and B8477-4 were placed in the interregional adaptability trials.

The latter part of the growing and all of the harvest seasons received above normal rainfall (Table 4). Consequently, processing characteristics were poor with minor exceptions (Yield Trial Tables).

Table 1. Distribution of first year seedling tubers and true seed of selected parental combinations from BARC, Beltsville, Md. 1976

Location	Cooperator	Number		
		Progeny	Seedling Tubers	True Seed
Domestic:				
Colorado	James Twomey	44	10,217	
Maine	David Wilson	82	18,200	
Minnesota	Florian Lauer	39	9,473	
North Carolina	Frank Haynes	24	4,987	
North Carolina	Frank Haynes	25		7,500
Pennsylvania	David MacKenzie	25		10,000
Pennsylvania	William Hepler	5		1,000
		TOTAL	42,877	18,500
Foreign:				
Korea	In Hwan Kim	21	4,219	
		50		5,000
Nigeria	Dale Suchomel	16	2,894	
Pakistan	Said Kamal Khan	30	5,085	
	A. H. K. Achakzai	28	5,122	
	Altaf Hussain	32	5,005	
		TOTAL	22,325	5,000
		GRAND TOTAL	65,202	23,500

Table 2. Distribution of Varieties and Advanced Selections to Cooperating States.

State	Cooperator	Number	
		Varieties	Clones
Alabama	Jack Turner	5	9
California	Donald Halseth		2
Delaware	Mike Orzalek	7	8
Florida	James Shumaker	11	92
Kansas	J. K. Greig	1	
Maryland	Stephen Sinden	2	17
	Lind Sanford		96
	James Schalk	4	16
	Robert Goth	20	5
Minnesota	Florian Lauer		6
Mississipi	C. P. Hegwood	3	11
New Jersey	Melvin Henninger	1	154
	Richard Nickeson	4	3
New York	Randy Greider		20
	E. D. Jones		5
	Joseph Sieczka		10
Ohio	Floyd Lower	1	4
Oregon	G. C. Carter	1	
Pennsylvania	David MacKenzie		8
	Paul Grun	12	
South Carolina	Wayne Sitterly	2	18
South Dakota	Paul Prashar	1	
Virginia	Boyett Graves	7	242
Washington	Larry K. Hiller	1	1
	William Hoyman	1	2
Wisconsin	Jim Johnson	3	
	TOTAL	77	729

Table 3. Varieties and Clones sent to foreign countries.

Country	Cooperator	Number	
		Varieties	Clones
India	Hari Kishore	1	
Korea	In Hwan Kim	5	23
Netherlands	W. Prummel	3	
Pakistan	S. M. A. Shah	6	3
Thailand	W. E. Manis	20	
	TOTAL	34	26

Table 4. Weather data, Aroostook Farm, Presque Isle, Maine; May - October 1977.

Date	Temp. 7-day Ave. Degrees F		Precipitation 7-day Total
	Maximum	Minimum	Inches
5/1-5/7	60	33	.22
5/8-5/14	55	34	.25
5/15-5/21	73	42	.08
5/22-5/28	79	51	.17
5/29-6/4	71	52	.50
6/5-6/11	60	46	2.91
6/12-6/18	68	49	2.82
6/19-6/25	65	49	.93
6/26-7/2	77	59	.96
7/3-7/9	73	52	.02
7/10-7/16	81	55	1.50
7/17-7/23	83	59	.01
7/24-7/30	71	51	.92
7/31-8/6	79	58	4.93
8/7-8/13	76	55	
8/14-8/20	70	49	.43
8/21-8/27	70	48	1.32
8/28-9/3	80	59	.07
8/4-9/10	66	44	.74
9/11-9/17	61	41	1.45
9/18-9/24	59	41	.29
9/25-10/1	57	42	2.03
10 2-10/8	55	38	1.63
10/9-10/15	50	37	1.28
10/16-10/22	49	38	2.25
10/23-10/29	58	35	.06
		Total	27.77

Table 5. Yields, tuber size, distribution, and quality characteristics of clones harvested 120 days after planting on Aroostook Farm (IRT).

Pedigree	MKT CWT	% MKT	% <1-7/8"	% Tuber Size Distrib. % Marketable 1-7/8"- 2-1/4"	2-1/4"- 3-1/4"	3-1/4"- 4"	> 4"	Tuber Rating 1/	SP GV 2/	50°F 3/ Color Chip	50°F 3/ Color FF	FF TEX	40°F 3/ Color Chip	40°F 3/ Color FF	FF TEX	40° - 70°F 3/ Color Chip	40° - 70°F 3/ Color FF	FF TEX
B6969-2	441	97	2	17	68	15	1	7	75	9.0	3.8	2.4				9.0	4.0	2.4
B6987-29	410	95	2	13	70	17	3	6	90	7.2	2.5	1.5				7.2	1.9	1.7
B7009-4	472	86	1	10	62	28	13	6	75	9.8	4.2	2.5				10.0	4.7	2.4
B7516-7	403	93	5	19	73	8	2	7	90	8.6	3.2	2.0				8.1	2.7	1.9
"	449	91	6	22	64	14	3	8	72	9.2	4.2	2.3				9.2	4.3	2.3
B7744-5	511	97	1	26	62	12	2	8	80	8.6	4.1	2.1				8.2	3.2	2.0
B8343-5	364	85	2	9	55	36	13	7	75	7.5	2.7	2.0	9.9	4.8	2.3	8.2	3.1	2.2
B8480-3	410	95	5	32	64	2		8	82	6.9	2.4	2.0				6.8	1.8	2.2
Atlantic	410	91	5	26	62	12	4	7	95	7.6	2.7	1.8	8.7	4.0	1.8	6.9	1.8	1.8
Superior	464	97	2	17	65	15	1	6	79	8.1	3.8	2.2				8.4	3.4	2.1
Sebago	403	95	4	19	69	12	1	5	77	9.0	3.7	2.4				9.2	4.1	2.2
Pungo	457	95	2	15	68	17	3	4	86	8.9	3.6	2.4				8.3	3.0	2.1
Kennebec	341	76	3	7	57	36	21	4	76	8.6	3.9	2.1				8.2	2.8	2.0
Katahdin	418	93	3	15	69	16	4	5	76	8.8	4.0	2.4				8.5	3.9	2.1
LSD 570	41 CWT								3.9	.7	.6	.4						
170	55 "								5.2	.9	.8	.5						

1/ 0 = Very poor to 9 = Outstanding

2/ 1.0 omitted

3/ Chips, 1-7 satisfactory; FF 1-3 satisfactory; Tex., 1-2 satisfactory

Table 6. Yield, tuber size, distribution, and quality characteristics of clones harvested 120 days after planting on Aroostook Farm (2)

Pedigree	MKT CWT	% MKT	% Tuber Size Distrib. % Mardetable <1-7/8"	1-7/8"- 2-1/4"	2-1/4"- 3-1/4"	3-1/4"- 4"	> 4"	Tuber Rating 1/	SP GV 2/	50°F 3/ Color Chip	50°F 3/ Color FF	FF TEX	40°F 3/ Color Chip	40°F 3/ Color FF	FF TEX	40° - 70°F 3/ Color Chip	40° - 70°F 3/ Color FF	FF TEX
B6987-43	271	80	2	5	46	49	18	6	87	6.0	2.0	1.9	7.8	3.4	2.0	6.0	1.6	2.0
" -145	286	93	7	22	73	5		4	88	6.3	2.1	1.8	7.8	3.4	1.9	7.0	1.6	2.0
B7200-33	472	94	6	36	62	2		6	64	9.1	4.2	3.0				10.0	4.0	2.6
B7603-6	325	91	5	21	64	15	4	3	76	9.1	3.5	2.0				8.6	3.4	2.0
B7629-1	240	69	2	11	61	28	29	3	69	9.6	4.3	2.3				9.6	4.3	2.1
B7680-12	426	87	12	58	37	5	1	2	75	8.7	3.0	2.5				8.1	2.6	2.0
B7802-2	348	88	4	13	60	27	8	4	74	8.6	3.7	2.0				9.0	3.9	2.1
B7805-1	325	84	4	12	67	21	12	6	76	9.9	4.7	2.5				9.7	4.4	2.2
B7839-7	286	80	7	16	59	25	13	4	70	9.7	4.4	2.5				9.4	3.5	2.5
B7836-6	348	88	2	11	64	25	10	5	76	8.6	3.8	2.1				8.8	2.4	2.0
B7848-2	372	89	11	48	48	4		5	81	8.8	3.9	2.6				8.4	3.5	2.4
B7902-4	418	96	4	25	70	6		7	72	9.7	4.0	2.1				9.5	4.1	2.0
B7910-6	310	78	10	17	55	28	12	7	68	9.8	4.3	2.8				10.0	4.4	2.4
B7939-4	348	92	6	31	60	9	2	4	76	8.4	2.9	2.0				8.8	3.6	2.0
B8019-4	449	95	2	14	72	14	3	5	73	10.0	4.8	2.0				10.0	4.7	2.0
B8073-8(3)	464	94	3	15	67	18	3	8	73	10.0	4.8	2.1				9.9	4.1	2.4
B8123-12	348	96	2	13	69	18	2	6	73	8.4	3.4	2.0				8.2	3.2	2.2
B8185-4	511	89	5	26	61	13	6	6	74	9.8	4.3	2.2				9.4	4.1	2.1
B8261-3	449	88	12	38	59	3		6	72	8.9	3.9	2.7				8.3	3.3	3.0
B8281-4	310	95	4	30	53	17	1	6	82	9.5	4.3	2.0				9.5	4.4	2.2
B8308-5	372	92	8	31	56	13		6	78	9.3	4.4	2.0				9.0	3.7	2.1
Cobbler	341	83	11	21	55	24	6	4	77	9.0	3.9	2.0				8.4	3.5	2.0
Monona	348	92	4	13	71	16	4	6	70	6.4	2.1	2.3				6.7	2.1	2.2
Superior	449	94	2	16	74	10	4	6	77	8.2	3.5	2.0				8.3	3.4	2.2
LSD 5%	57	CWT							3.3	.6	.6	.17						
1%	77	"							4.5	.8	.8	.22						

See footnote Table 5

Table 7. Yields, tuber size, distribution, and quality characteristics of clones harvested 120 days after planting on Aroostook Farm (1)

Pedigree	MKT CWT	% MKT	% <1-7/8"	% Tuber Size Distrib. % Marketable 1-7/8"- 2-1/4"	2-1/4"- 3-1/4"	3-1/4"- 4"	> 4"	Tuber Rating 1/	SP GV 2/	50°F 3/ Color Chip	50°F 3/ Color FF	FF TEX	40°F 3/ Color Chip	40°F 3/ Color FF	FF TEX	40° - 70°F 3/ Color Chip	40° - 70°F 3/ Color FF	FF TEX
B6503-2	379	94	1	12	73	15	5	6	89	6.5	1.9	2.1	8.2	2.9	2.0	6.3	1.5	1.9
B6955-35	341	92	6	25	61	14	2	6	89	6.4	2.2	2.1	8.0	3.2	2.0	6.8	2.4	1.9
B6987-136	395	91	2	18	69	13	7	7		5.6	2.2	1.5	8.8	3.7	2.0	7.3	1.8	1.8
" -162	348	96	4	20	67	13		6	91	5.9	2.3	1.6	7.8	2.8	2.0	5.8	1.7	2.0
" -184	317	91	7	22	63	15	2	5	97	6.1	2.1	1.8	8.9	3.9	1.9	6.0	1.7	1.8
B7154-6	403	91	7	35	62	3	2	4	72	10.0	4.6	1.8				9.9	4.2	2.1
" -10	379	91	6	25	63	12	3	6	73	8.4	3.3	2.1				8.1	2.8	2.1
B7200-26	403	95	5	19	75	6		7	82	7.0	2.9	2.1	8.3	3.8	2.1	7.6	2.5	2.6
B7592-1	372	91	9	23	65	12		5	83	8.9	4.0	2.1				8.0	2.9	2.1
B7595-7	426	92	8	24	62	14		6	78	8.7	3.9	2.2				8.3	3.6	2.3
B7518-6	317	91	7	22	66	12	2	6	78	7.8	3.0	2.1				7.6	2.8	1.9
B7620-7	395	94	6	22	67	11		6	85	8.6	3.7	1.9				8.0	2.8	2.0
B7621-1	356	94	4	17	72	11	2	6	86	9.2	4.0	2.1				7.9	2.6	2.1
B7694-1	341	92	6	25	64	11	2	4	79	8.3	2.8	2.0				7.7	2.8	2.3
B7763-3	449	94	6	17	66	17		5	74	10.8	4.9	2.3				9.8	5.0	2.5
B7838-5	403	91	9	38	58	4		4	86	8.1	3.0	2.0				7.5	2.4	2.0
B7859-2	317	85	15	54	44	2		5	92	8.3	3.6	1.8				8.2	2.9	1.8
B7902-8	325	91	9	24	67	9		7	82	10.0	5.0	2.0				9.7	4.2	2.0
Atlantic	364	92	8	26	57	17		6	98	8.2	2.7	1.7	9.3	3.8	1.9	7.5	2.2	1.7
Katahdin	372	96	4	19	71	10		6	81	9.0	4.2	2.3				8.2	3.3	2.1
Superior	403	96	3	17	71	12		5	81	9.1	4.0	2.1	10.0	4.8	2.1	8.6	3.9	2.1
Kennebec	364	77	3	15	53	32	20	6		8.9	4.1	2.1				7.3	2.6	2.0
Norchip	403	90	10	54	42	4		5		7.2	2.7	1.9				7.6	2.6	2.0
LSD 5%	72	CWT							4.2	.7	.6	.3						
1%	97	"							5.6	1.0	.8	.4						

See footnote Table 5

Table 8. Yield, tuber size, distribution, and quality characteristics of clones harvested 120 days after planting on Aroostook Farm (2)

Pedigree	MKT CWT	% MKT	% Tuber Size Distrib. % Marketable <1-7/8"	1-7/8"- 2-1/4"	2-1/4"- 3-1/4"	3-1/4" 4"	> 4"	Tuber Rating 1/	SP GV 2/	50°F 3/ Color Chip	50°F 3/ Color FF	FF TEX	40°F 3/ Color Chip	40°F 3/ Color FF	FF TEX	40° - 70°F 3/ Color Chip	40° - 70°F 3/ Color FF	FF TEX
B7930-2	495	93	5	34	59	7	2	7	81	10.0	4.2	2.1				9.8	4.4	2.3
B7957-5	341	90	8	27	64	9	2	6	77	8.9	3.9	2.2				8.5	3.2	2.1
B8091-8	472	91	8	38	56	6	1	5	85	9.5	4.2	2.0				9.3	3.9	2.0
B8275-15	356	96	4	35	61	4		4	96	7.7	2.6	1.8				7.1	2.4	2.0
B8281-4	317	89	4	37	46	17	7	5	80	9.6	4.3	2.4				10.0	4.5	2.3
B8314-9	348	92	6	33	58	7	2	4	92	7.7	3.1	2.0				6.8	2.0	2.0
B8352-3	457	91	5	22	68	10	4	6	72	9.6	3.9	2.5				9.5	4.2	2.5
B8392-5	426	90	3	18	65	17	7	7	82	9.2	4.1	2.7				8.5	3.4	2.2
B8393-6	472	94	4	23	69	8	2	8	73	9.8	4.2	2.7				9.2	4.4	2.6
B8462-1	364	90	8	28	64	8	2	6	79	8.8	3.5	1.9				8.2	3.0	1.9
B8477-4	341	92	6	23	64	13	2	6	92	6.3	2.5	1.9	7.7	2.7	1.7	6.6	1.5	1.8
B8477-10	294	88	1	10	61	29	11	6	88	6.0	2.1	1.5	7.7	2.5	1.9	6.2	1.8	2.0
B8486-1	387	93	1	15	67	18	6	6	87	7.8	3.2	1.8				7.6	2.1	2.3
B8497-36	372	94	4	22	77	1		7	74	9.2	3.7	2.1				9.1	3.8	2.0
Atlantic	341	86	4	18	64	18	10	6	93	8.1	2.9	1.7				6.8	2.0	1.8
Katahdin	441	95	3	16	68	16	2	7	78	8.9	4.1	2.3				8.4	3.6	2.3
Kennebec	410	82	3	11	66	23	15	7	77	8.4	3.8	2.0	9.0	4.0	2.0	8.2	3.7	2.0
Wauseon	372	83	7	12	68	20	10	6	81	9.3	3.8	2.4				8.8	3.6	2.1
LSD 5%	69	CWT							4.6	.8	.5	.3						
1%	92	"							6.1	1.0	.6	.4						

See footn ote Table 5

Table 9. Yield, tuber size, distribution, and quality characteristics of clones harvested 120 days after planting on Aroostook Farm (2)

Pedigree	MKT CWT	% MKT	% Tuber Size Distrib. % Marketable <1-7/8"	1-7/8"- 2-1/4"	2-1/4"- 3-1/4"	3-1/4"- 4"	>4"	Tuber Rating 1/	SP GV 2/	50°F 3/ Color Chip	50°F 3/ Color FF	FF TEX	40°F 3/ Color Chip	40°F 3/ Color FF	FF TEX	40° - 70°F 3/ Color Chip	40° - 70°F 3/ Color FF	FF TEX
B8498-9	271	90	2	17	63	20	8	5	78	7.5	2.6	2.2	9.2	3.9	2.0	7.8	2.9	2.1
B8500-27	441	90	2	14	65	11	8	7	84	9.7	4.0	2.1				8.9	3.4	2.0
B8501-10	433	86	5	21	63	16	9	6	89	8.5	3.6	1.7				8.2	3.6	1.9
B8503-16	279	86	7	25	61	14	7	6	78	8.9	3.7	2.4				8.6	2.9	2.2
B8514-18	426	89	2	14	62	14	9	7	76	10.0	4.3	2.0				9.1	3.9	2.2
B8543-9	255	89	3	21	67	12	8	7	77	6.5	2.4	2.0	8.3	3.3	1.9	6.9	2.6	2.0
B8566-4	325	89	11	29	64	7		6	87	7.7	2.3	1.9	9.3	4.0	1.9	7.6	2.4	2.0
B8575-5	534	92	1	13	70	17	7	6	85	9.1	3.8	2.2				8.9	4.1	2.2
B8579-1	410	91	7	23	68	9	1	6	73	7.6	2.2	1.9	8.9	3.7	1.9	7.8	2.8	2.0
B8599-42	333	83		7	51	42	17	6	87	8.6	3.2	2.3				6.8	2.4	2.0
B8612-1	395	93	2	10	71	19	5	6	94	9.7	4.6	2.1	9.4	4.3	1.9	8.5	3.9	2.0
" -2	317	87	4	22	61	17	9	6	87	8.2	3.5	1.9				7.4	2.9	1.9
B8614-12	348	94	4	16	64	20	2	6	77	8.4	3.3	2.0				7.4	2.4	1.9
B8616-7	333	84	2	12	58	30	14	5	94	8.5	3.7	2.1				8.4	4.1	2.0
Atlantic	348	82	5	16	64	20	13	5	80	8.2	2.7	1.9	9.5	4.0	1.9	7.9	2.7	1.8
Kennebec	403	80	3	11	55	34	17	6	81	9.0	4.0	2.0				8.4	3.2	2.0
Norchip	426	89	11	51	46	3		4	86	7.5	2.8	2.0	9.0	4.3	1.9	8.0	3.0	2.1
Superior	488	95	2	14	71	15	3	5	74	9.0	4.0	2.1				8.5	3.7	2.0
LSD 5%	55 CWT								4.2	.7	.5	.2						
1%	73 "								5.5	1.0	.6	.3						

See footnote Table 5

Table 10. Early-medium maturity Russet trial harvested 110 days after planting, Aroostook Farm (1).

Pedigree	MKT CWT	% MKT	% Tuber Size (ozs.) Distrib. % Marketable < 4	4-8	8-12	12-16	> 16	Tuber Rating 1/	SP GV	50°F 3/ Color Chip	FF	FF TEX	40°F 3/ Color Chip	FF	FF TEX	40° - 70°F 3/ Color Chip	FF	FF TEX
B7147-8	317	95	5	46	51	3		7	82	8.4	2.8	2.1				8.1	2.8	2.1
" -15	263	87	5	21	56	23	8	4	83	9.2	4.1	2.0				8.9	3.3	2.1
B7196-74	302	93	1	31	51	18	6	5	70	8.9	4.4	2.4				8.9	3.8	2.3
B7583-6	333	93	7	30	65	5		7	81	9.5	4.1	2.1				8.7	3.1	2.1
B7608-4	372	92	4	17	65	18	4	5	67	8.9	3.8	2.4				9.8	4.4	2.6
B8218-4	341	94	6	34	52	14		6	76	9.3	4.0	2.1				8.6	3.7	2.2
B8430-10	333	98	2	26	63	11		7	72	9.4	3.9	2.1				8.9	4.0	2.5
B8502-9	286	88	5	22	60	18	7	4	72	9.5	4.2	2.0				8.5	3.5	2.0
B8525-5	263	92	5	32	56	12	3	7	57	8.5	4.5	2.0				8.4	3.1	2.0
B8530-4	232	91	6	27	60	13	3	5	80	8.0	3.4	2.0				8.1	3.3	2.1
" -9	232	97	3	17	67	16		7	77	7.6	2.7	2.0				6.9	2.2	2.0
B8686-8	294	90	7	21	58	21	3	5	89	6.7	2.5	2.0				6.4	2.0	1.9
B8704-5	279	92	8	25	56	19		7	73	9.2	3.8	2.0				9.2	3.8	2.0
B8758-5	356	92	8	33	57	10		8	68	8.7	3.4	2.0				9.5	4.2	2.0
B8763-15	310	89	9	35	53	12	2	7	78	8.5	3.5	2.0				9.1	3.7	2.0
B8784-5	302	91	9	33	59	8		5	72	8.1	3.5	2.0				8.5	3.3	2.1
B8852-2	279	92	5	28	58	14	3	7	70	9.8	4.2	2.6				9.2	3.9	2.2
B8926-1	294	86	7	28	49	23	7	3	78	8.9	3.9	2.6				8.2	3.7	2.0
B8934-3	263	83	10	41	47	12	7	4	70	8.5	4.2	2.3				9.0	3.6	2.3
" -4	255	83	8	24	61	15	10	5	85	8.0	3.2	2.0				7.1	2.3	2.0
" -5	348	87	5	44	48	8	8	4	72	9.5	4.0	2.3				10.0	4.6	2.3
B8939-17	310	87	9	38	50	12	2	5	73	8.3	3.4	2.0				9.2	3.9	2.0
Norgold Russet	364	90	6	30	60	10	4	6	74	9.6	4.6	2.0				9.5	4.0	2.0
Russet Burbank	271	85	15	44	42	14		3	80	8.8	3.9	2.0				8.5	3.8	2.0
LSD 5%	52	CWT							4.0	1.0	.6	.3						
1%	71	"							5.6	1.3	.8	.4						

See footnote Table 5

Table 11. Medium-late Russet trial harvested following 120 day growing season, Aroostook Farm (1).

Pedigree	MKT CWT	% MKT	% Tuber Size (ozs.) Distrib. % Marketable < 4	4-8	8-12	12-16	> 16	Tuber Rating 1/	SP GV 2/	50°F 3/ Color Chip	50°F 3/ Color FF	FF TEX	40°F 3/ Color Chip	40°F 3/ Color FF	FF TEX	40° - 70°F 3/ Color Chip	40° - 70°F 3/ Color FF	FF TEX
B7147-8	294	93	7	8	41	51		6	87	8.2	3.3	2.1				8.2	2.8	2.1
" -15	286	84	5	16	61	22	11	3	93	8.8	3.7	2.0				8.6	3.3	2.1
B7582-6	263	83	7	23	57	20	10	5	83	9.5	4.0	2.0				9.0	3.3	2.0
B7583-6	294	90	9	26	58	15	2	3	88	9.2	4.2	2.0				8.4	3.4	2.0
B7678-17	294	95	7	32	60	8		5	80	8.5	3.5	2.4				8.8	3.1	2.4
B7783-6	325	91	4	12	48	40	5	6	75	8.9	3.9	2.0				9.1	4.1	2.2
B7848-19	341	94	4	17	64	19	2	6	85	8.3	3.6	2.1				8.1	2.7	2.3
B8281-5	279	90	10	33	50	17		6	88	8.3	3.3	2.0				8.3	3.8	2.0
B8310-13	364	90	7	30	58	12	3	6	80	9.8	4.6	2.3				10.0	4.8	2.5
B8357-1	403	95	5	25	58	17	2	5	85	9.5	4.2	2.2				10.0	4.0	2.4
" -4	317	84	6	22	51	27	10	5	90	9.7	4.5	2.0				8.6	3.2	2.1
B8430-14	286	86	14	51	43	5		5	87	8.7	3.7	2.0				8.4	3.6	2.0
B8477-11	317	93	7	34	63	2		3	86	4.1	1.4	1.7	6.3	2.5	1.7	5.6	1.1	1.5
B8489-2	240	91	9	23	55	23		4	84	8.6	3.5	2.0				7.5	2.4	2.0
B8502-12	317	87	13	44	51	5		5	87	8.4	4.4	2.0				8.3	3.2	2.0
B8507-11	379	86	5	16	65	18	9	5	83	9.0	4.1	2.0				8.7	3.1	2.1
Norgold Russet	395	88	7	31	60	9	5	7	76	9.5	4.3	2.1				9.8	4.3	2.0
Russet Burbank	302	85	13	31	41	28	2	3	82	8.7	4.0	2.0				8.6	3.8	2.0
LSD 5%	58 CWT/AC								4.9	.7	.5	.15						
1%	77 CWT/AC								6.5	.9	.6	.20						

See footnote Table 5

Table 12. Medium-late Russet trial harvested following 120 day growing season, Aroostook Farm (2).

Pedigree	MKT CWT	% MKT	% Tuber Size (ozs.) Distrib. % Marketable < 4	4-8	8-12	12-16	> 16	Tuber Rating 1/	SP GV 2/	50°F 3/ Color Chip	50°F 3/ Color FF	FF TEX	40°F 3/ Color Chip	40°F 3/ Color FF	FF TEX	40° - 70°F 3/ Color Chip	40° - 70°F 3/ Color FF	FF TEX
B8519-4	341	86	4	16	53	31	10	5	66	9.5	4.4	2.1				10.0	4.5	2.4
B8524-21	317	84	16	21	69	10		6	79	8.9	3.8	2.4				9.6	4.1	2.6
" -27	356	92	6	25	53	21	2	4	81	9.6	4.0	2.2				9.1	3.8	2.3
B8525-10	240	90	11	44	38	18		3	78	9.4	4.1	2.0				8.5	3.2	2.0
" -18	341	88	4	18	61	21	8	3	83	8.0	3.3	2.0				7.7	2.8	2.0
B8527-3	317	87	11	37	46	17	2	3	86	8.0	3.2	2.0				7.0	2.1	1.9
" -4	248	87	8	30	55	15	5	5	77	8.6	3.5	2.3				7.7	2.4	2.2
B8528-3	325	93	7	33	56	12		7	81	8.1	3.4	2.4				8.3	3.1	2.3
" -4	294	81	4	18	63	18	15	5	74	9.1	3.9	2.2				9.5	4.1	2.4
B8529-4	333	94	6	27	59	14		4	83	8.5	3.0	2.1				8.3	2.8	2.3
" -12	333	93	4	29	62	9	2	3	93	8.0	2.7	1.9				8.5	2.2	2.0
" -17	286	91	7	29	61	10	2	4	81	6.4	2.2	1.9	8.5	3.9	2.0	6.8	1.8	1.9
B8530-7	341	86	4	16	59	25	10	4	74	9 4	4.1	2.6				9.1	3.8	2.6
" -8	310	91	9	40	48	12		4	75	8.4	3.3	2.1				8.4	3.1	2.1
B8548-21	294	94	6	30	49	21		7	73	8.2	3.1	2.3				8.7	3.6	2.7
B8697-34	457	91	6	22	61	17	3	7	70	9.9	4.3	2.3				9.6	4.6	2.3
Norgold Russet	418	89	8	30	56	15	3	7	75	9.9	4.4	2.1				9.1	4.3	2.3
Russet Burbank	333	83	9	39	45	16	8	4	82	8.7	3.7	2.1	10.0	5.0	2.0	9.0	4.1	2.0
LSD 5%	46	CWT/AC							4.7	.8	.5	.25						
1%	62	CWT/AC							6.2	1.0	.7	.32						

See footnote Table 5

Table 13. Medium-late Russet trial harvested following 120 day growing season, Aroostook Farm (3).

Pedigree	MKT CWT	% MKT	% Tuber Size (ozs.) Distrib. % M < 4	4-8	8-12	12-16	> 16	Tuber Rating 1/	SP2 GV 2/	50°F 3/ Color Chip	50°F 3/ Color FF	FF TEX	40°F 3/ Color Chip	40°F 3/ Color FF	FF TEX	40° - 70°F 3/ Color Chip	40° - 70°F 3/ Color FF	FF TEX
B8545-18	248	83	17	55	36	9		6	72	8.5	3.2	2.1				8.4	3.5	2.1
B8822-2	310	89	11	44	46	10		5	81	8.5	3.7	2.0				8.4	3.7	2.0
" -9	410	90	8	37	56	8	2	5	72	8.4	3.5	2.3				8.7	4.0	2.4
" -27	279	76	8	24	54	22	16	5	78	8.6	3.7	2.0				9.0	4.3	2.0
" -28	294	88	9	26	63	11	2	4	71	8.2	3.3	2.0				7.8	3.2	2.0
" -29	348	94	6	22	62	16		3	82	8.2	2.8	2.0				8.7	3.6	2.0
" -43	325	82	18	57	41	2		4	81	8.2	3.4	2.0				8.9	4.0	2.1
B8847-8	325	79	2	12	60	28	19	3	79	9.9	4.2	2.1				9.3	4.4	2.4
B8852-2	286	82	4	22	60	18	11	4	66	9.7	4.3	2.3				9.9	4.4	2.4
B8921-2	372	87	11	35	46	19	2	4	79	9.2	4.6	2.0				9.3	4.3	2.0
B8922-6	372	90	6	23	60	17	4	7	67	9.4	4.1	2.0				9.8	4.0	2.1
" -15	356	84	7	22	56	22	9	5	68	9.3	4.2	2.4				9.9	4.6	2.3
Norgold Russet	379	83	10	30	54	16	7	5	76	9.3	4.2	2.2				9.9	4.5	2.1
Russet Burbank	379	88	7	37	49	14	5	4	81	8.4	3.7	2.0				8.8	3.9	2.0
LSD 5%	51 CWT/AC								5.7	.6	.5	.2						
1%	68 CWT/AC								7.6	.9	.7	.3						

See footnote Table 5

USDA, Presque Isle, Maine

James Frank, R. E. Webb, R. W. Goth and D. R. Wilson

Disease Resistance Evaluations

Disease resistance testing is carried out on Aroostook Farm at Presque Isle, Maine. Each test is located in its own isolated plot to prevent interference from other disease tests. The general procedures for each test are presented along with the disease reactions obtained in 1977 for all cultivars tested.

The 1977 growing season in Presque Isle, Maine was abnormally wet, similar to 1976, but different from the dry year experienced in 1975. The 1977 rainfall recorded was: May - 0.74 inches, June - 6.4, July - 1.8, August - 7.8, and September - 3.5. Temperatures were comparable to those in 1976. These damp, cool conditions were favorable for growth of Verticillium and Rhizoctonia. Epidemic conditions also existed for early- and late-blight development in late July and August. Even with the excessive moisture throughout the season, there was a dry period early in July. Most plants were in the tuberization stage at this time and dry conditions during tuberization are optimum for common scab development. Therefore, the 1977 growing season provided conditions for successful disease evaluations.

Resistance to Verticillium wilt (Verticillium albo-atrum, DM). Seed of the test clones are cut in the field, dipped into a spore suspension of the pathogen (80,000 spores/ml), planted, and immediately covered to prevent dissication of spores. Once wilt symptoms are evident in the test plot, ratings are made on a bi-weekly basis. Clones are evaluated on a 0-9 scale, with nine indicating healthy plants and zero signifying plant death. The final disease ratings for the control plants were: Abnaki - 9.0, Cherokee - 5.0, Kennebec - 2.5.

After the potato plants have been damaged by frost and meaningful wilt data is no longer feasible, the tubers are dug and placed in mesh bags. Within one month after harvest, the tubers are washed, counted and evaluated for pinkeye disease. The data is reported as percentage of tubers with pinkeye. The ratings for the controls were: Abnaki - 1%, Cherokee - 20%, Kennebec - 20%.

Resistance to Late Blight (Phytophthora infestans). Test clones were planted along with the variety Green Mountain, which served as a susceptible spreader. The Green Mountains were planted as guard rows and every third row in the plot. The plot consisted of two replications of a two-hill plot. The plot was inoculated with a zoospore suspension

(race 0) in the second week of July. Readings were taken once a week until harvest. Evaluations were made on a 0-9 scale, with nine indicating no disease. Final disease ratings of the controls were: Kennebec - 2.5, Sebago - 2.5, Atzimba - 9.0.

Resistance to Early Blight (Alternaria solani). This test consisted of two-hill plots, replicated twice with guard rows and every third row throughout the plot planted with a susceptible spreader (B5281-1). The plot was inoculated with spores in the second week of July. Readings were made weekly until harvest using a 0-9 scale, with nine indicating no disease. Final disease ratings for the controls were: Kennebec - 8.2, Cobbler - 8.0, Norgold Russet - 7.0.

Resistance to Common Scab (Streptomyces scabies). Tubers of the test clones were planted in the same field used in previous years for this test. The test consisted of two replications of a two-hill plot with Green Mountains (susceptible) planted as guard rows and every third row in the plot. The tubers were dug after Labor Day and each tuber was rated and placed into a class. The two figures in the tables represent the surface area affected/the lesion type. For area: 0 = none; 1 = 1-19%; 2 = 20-39%; 3 = 40-59%; 4 = 60-79%; and 5 = 80-100%. For lesion type: 0 = none; 1 = small, superficial lesions; 2 = medium to large but superficial lesions; 3 - large, slightly raised or sunken lesions; 4 = large and rough; 5 = coalesced and pitted.

Presque Isle Table 1. Pedigrees tested in disease trials. 1977.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B6503-2	3/3				
B6951-1	4/3				
B6955-35	3/4				
B6969-2	4/3				
B6986-2	4/3				
B6987-29	1/3				
B6987-43	2/3				
B6987-56	1/1				
B7139-4	5/5				
B7147-8	2/3				
B7151-4	3/3				
B7154-6	2/3				
B7154-10	3/3				
B7160-4	1/3				
B7167-2	3/4				
B7252-3	3/3				
B7516-2	3/4				
B7516-7	3/4				
B7516-9	3/3				
B7583-6	4/3				
B7592-1	5/3				
B7592-7	3/4				
B7603-1	4/5				
B7603-9	1/3				
B7608-1	1/1				
B7608-4	2/1				
B7618-6	3/2				
B7620-7	3/4				
B7633-12	4/3				
B7636-15	1/3				
B7679-11	1/3				
B7680-4					8.0
B7680-6	2/3				
B7680-10	1/1				
B7680-11	1/1				8.0
B7680-12	2/2				
B7680-13					8.3
B7680-14					7.5
B7680-16	1/2				8.0
B7680-19	2/2				8.3
B7680-20	3/4				
B7680-21	2/2				
B7680-23	2/2				7.3
B7680-26	3/3				
B7680-31	3/3				8.3
B7680-33	3/3				
B7680-38	2/3				7.5
B7680-39					7.3

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B7680-41	2/5				
B7684-6	1/1				
B7684-7	1/2				
B7685-8	2/4				
B7694-1	3/3				
B7711-11	-/1				
B7744-5	3/2				
B7767-2	5/4				
B7783-8	3/4				
B7802-2	2/3				
B7805-1	2/5				
B7809-5	3/5				
B7813-5	1/2				
B7828-3	3/5				
B7828-10	3/5				
B7828-13	2/5				
B7828-19	2/4				
B7832-2	2/3				
B7838-5	2/5				
B7839-7	2/4				
B7840-2	2/2				
B7845-4	3/4				
B7845-14	3/5				
B7845-19	4/4				
B7845-26	3/5				
B7845-29	1/3				
B7848-2	1/3				
B7848-19	2/4				
B7849-5	1/1				
B7859-2	4/4				
B7859-5	2/2				
B7859-6	1/1				
B7866-3					
B7871-5	1/1				
B7872-7	1/1				
B7881-3	0/0				
B7881-9	1/3				
B7897-3	1/3				
B7897-4	3/2				
B7897-8	3/1				
B7897-9	2/2				
B7897-11	2/3				
B7902-4	3/2				
B7902-8	3/1				
B7902-9	2/2				
B7902-11	2/3				
B7905-2	2/3				
B7910-6	3/4				
B7925-3	2/2				

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B7929-3	2/3				
B7930-2	2/1				
B7978-1	1/5				
B8004-8	3/4				
B8019-4	2/3				
B8019-7	2/2				
B8073-3	1/3				
B8086-3	1/4				
B8087-6	1/4				
B8091-8	2/4				
B8101-3	2/2				
B8123-11	2/2				8.0
B8132-4	3/4				
B8148-4	3/3				
B8178-4	1/4				
B8181-1	3/4				
B8181-3	2/3				
B8185-4	2/3				
B8210-1	1/2				
B8210-3	2/3				
B8218-4	1/3				
B8222-1	1/3				
B8235-5	1/2				
B8247-1	3/3				
B8262-2	2/3				
B8275-15	1/2				
B8276-13	1/2				
B8281-4	3/3				
B8281-5	2/3				
B8302-5	3/4				
B8308-5	4/4				
B8308-13	1/4				
B8314-5	1/2				
B8314-9	2/3				
B8332-10	1/1				
B8332-3	1/2				
B8354-11	2/2				
B8356-1	3/2				
B8357-1	2/4				
B8375-1	2/2				
B8375-7	3/2				
B8377-2	1/3				
B8392-5	3/3				
B8393-6	3/2				
B8393-7	3/4				
B8393-8	3/4				
B8395-3	2/3				
B8395-5	1/3				

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B8418-14	3/3				7.5
B8423-5	3/5				8.3
B8424-4	3/4				7.0
B8424-10	3/3				8.5
B8424-11	3/3				
B8424-14	2/4				
B8424-15	2/2				
B8427-3	1/1				6.5
B8427-4					7.8
B8427-8	1/2				6.8
B8427-11	1/2				7.0
B8427-14	1/2				7.0
B8428-1	2/5				6.3
B8428-6	1/5				7.0
B8428-8					5.5
B8428-10	1/2				7.3
B8429-9	3/3				6.5
B8430-3	2/3				
B8430-6	1/2				
B8430-9		8.5	7.0	3	
B8433-4					7.8
B8433-11					7.5
B8434-15					6.3
B8434-16					7.8
B8443-5					8.3
B8443-8					8.0
B8443-12					8.8
B8459-6					8.0
B8477-3	2/2	0.0	7.0	3	
B8477-6		1.0	5.0	0	
B8477-7		2.5	7.5	12	
B8477-8		1.5	5.0	0	
B8477-10		4.5	4.5	3	
B8477-11	2/2	0.0	3.0	43	
B8430-13		4.0	6.0	9	
B8430-17	2/2	0.5	6.0	0	
B8497-8		2.0	8.0	0	
B8497-11	2/2	1.5	7.5	0	
B8497-17	2/4	4.0	5.5	0	
B8497-21	2/3	0.0	6.5	7	
B8499-6		0.0	4.5	0	
B8499-8		0.0	7.5	27	
B8500-2		8.5	6.0	10	
B8500-8	1/3	7.5	3.0	0	
B8500-10	2/3	7.5	3.0	0	
B8500-27					7.3
B8514-4		1.0	8.0	0	
B8514-5		0.0	3.0	0	

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B8514-8	1/3	0.0	7.0	21	
B8514-9		2.0	8.5	9	
B8514-10		0.0	4.5	17	
B8514-11		0.0	9.0	0	
B8514-13	1/2	0.0	3.5	0	
B8524-2		0.0	2.0	0	
B8524-3	2/3	7.5	4.5	0	
B8524-6		0.5	6.0	0	
B8524-8	2/4	5.5	3.5	6	
B8524-10	2/3	0.0	2.0	0	
B8524-11		0.0	7.0	0	
B8524-12	2/3	0.0	2.0	0	
B8524-13		8.5	4.5	0	
B8524-14	2/2	7.5	4.5	0	
B8524-17	2/3	6.5	2.5	0	
B8524-18	2/3	8.0	2.5	0	
B8524-21					7.8
B8524-27					7.0
B8528-4					6.3
B8546-6					5.8
B8548-2	3/4	0.0	6.0	29	
B8548-5		0.0	4.0	0	
B8548-12		0.0	6.0	0	
B8548-13		0.0	6.5	0	
B8548-25		3.5	9.0	0	
B8548-30	4/5	0.0	4.0	0	
B8556-2	2/4	0.5	7.5	0	
B8559-3		2.5	6.0	0	
B8574-16					6.3
B8579-1	3/4	3.0	5.5	21	
B8579-3		0.0	2.5	0	
B8641-1					7.0
B8641-8					6.0
B8680-4					
B8681-5	2/4				
B8681-7	2/5				
B8683-3	2/5				
B8683-5	3/5				
B8684-1					
B8685-2	2/5				
B8685-4	2/5				
B8685-5	1/3				
B8686-2	2/4				
B8686-7					
B8686-8	1/5				
B8687-4	3/4				
B8687-5	2/2				
B8687-10	3/4				

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B8687-16	3/3				
B8687-20	2/2				
B8687-22	2/4				
B8687-23					
B8687-24	1/4				
B8682-2					
B8682-5	1/3				
B8682-6					
B8689-1	2/3				
B8689-3	2/4				
B8689-5	2/3				
B8689-6	2/5				
B8690-2	2/4	0.0	5.0	8	
B8690-6	1/2	0.0			
B8690-7	1/2	1.0			
B8690-8	1/4	0.0			
B8690-12	1/3	1.0			
B8690-13	2/3	0.0			
B8690-17	2/3	0.5			
B8691-3		0.0			
B8691-8	3/5	7.5			
B8691-13	0.0				
B8691-18		8.0			
B8692-3	3/3	0.0			
B8692-6	2/3	0.0			
B8692-12	3/4				
B8692-14	2/5	0.0			
B8693-4	1/2	0.0			
B8694-4		2.0			
B8697-5	2/3	0.5	1.0	32	
B8697-28	4/4	7.5			
B8697-29	5/3	0.0	3.5	0	
B8697-34	3/3	8.0			
B8700-2		0.0			
B8704-3	2/3	0.5			
B8704-4	2/4	0.0			
B8704-9	4/3	0.0			
B8704-12	3/2	0.5			
B8706-7	4/3	0.5			
B8706-8	3/2	0.0	5.0	11	
B8707-1		0.0			
B8710-1	2/4	0.0			
B8710-11	4/4	6.5			
B8710-16	4/3	4.0			
B8710-17	2/4	0.0			
B8710-19		7.5			
B8711-2	1/5	0.0			
B8711-3		0.0			

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B8712-1		8.0			
B8712-6		8.0			
B8713-3		0.5			
B8713-5	1/5	7.5			
B8713-8	2/2	7.5			
B8713-10	T/5	0.0			
B8713-21		0.5			
B8713-24	1/2	2.0			
B8713-27	2/3	8.0			
B8713-28		1.0			
B8715-3		0.0			
B8715-6	2/3	0.0			
B8715-13		7.5			
B8715-20		7.0			
B8715-22	1/2	7.5			
B8718-1	1/4	7.5			
B8720-2		7.5			
B8720-5	2/4	7.5			
B8720-6	2/3	7.0			
B8721-2	3/4	0.5			
B8721-9		8.0			
B8724-2	5/2	5.0			
B8733-2		7.0			
B8733-6		0.0			
B8735-3	3/4	8.0			
B8735-5	3/4	7.5			
B8737-1	4/5	7.5			
B8740-1	4/4	6.5			
B8745-1	4/4	0.5	4.5	18	
B8751-1		0.5	3.0	0	
B8751-6		0.0			
B8754-2	3/4	0.0			
B8755-3	2/3	0.0			
B8756-6		0.0			
B8757-2			3.5	7	
B8757-7	4/5	8.0			
B8758-2		0.5			
B8761-2	5/5	0.0			
B8763-2	4/5	8.5			
B8763-14	4/4	0.0	4.5	0	
B8766-1	4/5	0.5			
B8766-4	4/4	0.0	6.0	31	
B8767-2		2.0			
B8768-4		2.0			
B8769-4	3/5	7.5			
B8769-5	3/5	7.5			
B8770-1	3/4	0.0			
B8770-3	3/5	0.0			

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B8771-2	4/4	0.5			
B8771-5	3/5	0.0	2.5	0	
B8771-6	3/3	0.0	8.5	0	
B8771-7	3/2	0.0	7.5	0	
B8773-10	1/1	0.0			
B8773-17	4/4	0.0			
B8773-19	3/4	7.5			
B8773-23		8.0			
B8777-7		0.0			
B8778-1	3/5	0.0			
B8779-1	4/4	0.0			
B8780-3		0.5			
B8782-6	3/5	0.0			
B8783-1	2/3	0.0			
B8783-2		0.0			
B8783-6	3/5	0.0			
B8783-8	5/5	0.0			
B8783-12		0.5			
B8784-5	4/4	7.5			
B8787-3	4/4	0.0			
B8787-8	4/5	0.0			
B8788-2	4/5	0.0	5.5	26	
B8788-5	5/5	8.0			
B8789-3		0.0			
B8790-3	4/5	7.5			
B8794-6	4/5	0.5			
B8794-7	3/4	0.0			
B8798-3	3/3	0.0			
B8798-10	5/5	0.0			
B8798-16	4/5	0.0			
B8798-18	2/4	0.0			
B8798-20	2/3	0.0			
B8799-8	1/2	0.0			
B8799-13	2/3	0.0			
B8799-16	3/4	0.0			
B8800-3	3/4	0.0			
B8803-1	4/3	0.0			
B8812-3	3/4	7.5			
B8812-4	3/3	8.0			
B8812-10	3/3	7.5			
B8812-13	3/3	7.5			
B8812-15	3/5	8.0			
B8812-16	4/3	0.0			
B8812-21		0.0			
B8815-1		0.0	4.5	0	
B8816-2	3/2	0.0	7.5	0	
B8817-4	1/3	0.0	6.0	0	
B8820-4	3/3	0.0	8.0	0	

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B8821-7	3/4	8.0	6.0	0	
B8822-2	4/5	0.0	3.5	5	
B8822-4	2/3	7.5	4.5	17	
B8822-8	3/3	7.5	6.0	0	
B8822-9	2/3	0.0	3.5	0	
B8822-25	1/1	8.0	2.0	15	
B8822-27	1/2	8.0	4.0	0	
B8822-29	2/4	0.0	4.0	0	
B8822-30	2/3	7.0	4.5	0	
B8822-32	1/2	8.0	3.0	0	
B8822-37	3/2	7.5	5.5	0	
B8822-42	3/4	7.5	2.0	0	
B8822-43	2/2	8.5	4.5	0	
B8823-9	5/5	8.0	6.0	7	
B8823-13	5/5	8.0	3.5	15	
B8824-3	5/5	8.0	6.5	8	
B8824-7	5/5	7.5	4.0	0	
B8824-18	3/5	8.5	4.5	0	
B8827-3	4/5	0.0	3.0	0	
B8832-3	3/5	0.0	6.0	0	
B8833-6	2/4	0.0	6.5	0	
B8847-5	3/4	0.0	5.0	0	
B8848-2	2/3	8.5	5/5	0	
B8849-1		0.0	2.5	0	
B8851-9	3/3	0.0	5.0	0	
B8852-1	4/5	0.5	3.5	0	
B8853-1	2/4	0.0	6.0	0	
B8853-7	2/3	0.0	6.0	0	
B8860-2		0.0	3.5	0	
B8860-3		0.0	6.0	3	
B8860-4	3/4	0.0	6.0	0	
B8860-5	4/5	8.0	5.5	0	
B8860-6	3/3	8.0	4.5	0	
B8860-7	4/5	8.0	4.0	0	
B8861-1	2/5	0.5	6.0	0	
B8870-2		1.0	6.5	2	
B8877-1	4/3	1.0	6.0	0	
B8879-1	3/5	0.0	3.0	0	
B8881-3	1/3	1.0	5.5	0	
B8881-5	2/4	0.0	7.0	0	
B8881-6	2/2	8.0	7.0	0	
B8881-8	3/4	7.5	5.0	3	
B8881-10	3/4	7.0	5.5	0	
B8881-16	4/3	0.0	5.0	10	
B8881-17		0.0	3.5	0	
B8883-1	3/3	0.0	7.0	0	
B8884-5	3/2	8.0	7.0	0	
B8884-7	4/3	8.0	2.5	29	

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B8885-3	3/3	7.0	6.5		
B8886-1	4/4	6.5	7.0	0	
B8887-1	3/4	0.0	4.0	0	
B8898-1		0.0	1.5	0	
B8898-3	4/4	0.0	1.5	7	
B8899-2	4/4	0.0	5.5	24	
B8899-13	3/3	8.0	3.5	7	
B8901-6	2/3	0.0	2.5	11	
B8903-2	2/2	0.0	3.0	0	
B8903-8		0.0	8.5	0	
B8904-4	2/3	0.0	8.0	8	
B8907-3	2/2	0.5	5.0	0	
B8907-4	2/3	0.0	5.5	19	
B8907-8	1/3	1.0	7.0	9	
B8908-3	2/4	0.0	4.0	17	
B8911-4	4/3	7.0	7.5	0	
B8913-4		1.5	6.5	0	
B8918-2	2/3	0.0	4.0	26	
B8919-1	2/4	0.0	4.0	0	
B8920-1	3/3	0.0	4.5	0	
B8921-1	3/3	0.0	4.5	0	
B8921-2	2/4	0.0	6.0	0	
B8922-3		0.0	4.0	0	
B8922-4	2/4	0.0	6.0	0	
B8922-6	3/5	7.0	5.0	0	
B8922-10	3/3	6.0	6.0	0	
B8922-15	3/4	8.0	5.0	0	
B8926-1	3/4	2.0	5.0	0	
B8931-2	3/3	8.0	3.5	0	
B8932-2	3/4	8.0	5.0	32	
B8934-2	3/5	0.0	3.0	0	
B8934-3	3/4	0.0	4.0	0	
B8934-4	2/4	0.0	5.5	0	
B8934-5		0.0	5.0	0	
B8937-2	2/4	1.5	3.5	13	
B8937-3	2/5	4.0	1.5	0	
B8937-6	3/2	7.5	2.0	0	
B8937-9	1/3	0.5	4.0	0	
B8939-8	2/3	0.0	4.0	0	
B8939-14	2/4	0.0	5.5	0	
B8939-17	2/3	0.0	4.0	0	
B8943-2		0.0	5.5	9	
B8943-4	3/5	0.0	6.0	0	
B8943-6		0.0	4.5	0	
B8945-1	1/4	8.0	5.0	0	
B8947-1		0.0	6.0	0	
B8947-2	T/2	0.5	5.5	0	
B8947-3	2/3	8.0	5.0	8	

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B8949-1	T/2	8.0	3.5	0	
B8949-4	2/3	8.5	3.5	30	
B8950-3	3/3	0.0	6.5	0	
B8950-4		0.0	2.5	0	
B8958-3	3/3	0.0	5.0	26	
B8963-1	1/3	8.0	5.0	0	
B8965-1	2/4	3.0	5.5	0	
B8965-2	4/3	1.5	5.5	4.0	
B8966-3	2/3	7.0	7.0	0	
B8968-1	3/3	8.0	3.5	0	
B8972-1	2/5	0.0	5.5	0	
B8977-2	3/3	0.0	6.5	0	
B8999-1		1.0	3.0	6	
B8999-6		0.5	9.0	0	
B8999-10	2/4	6.5	7.0	0	
B9000-1		5.5	4.5	15	
B9000-2	1/3	8.0	4.5	0	
B9000-5	3/3	7.5	5.5	16	
B9000-7	4/3	5.0	8.0	14	
B9001-3	2/3	4.0	6.5	0	
B9001-6	3/2	2.5	4.0	0	
B9004-7		2.0	8.0	0	
B9004-8	1/2	2.5	7.0	0	
B9004-9	3/2	0.0	6.0	0	
B9006-5		1.5	6.0	34	
B9007-20		0.0	4.5	0	
B9007-22		7.5	7.5	0	
B9007-31		0.0	4.5	0	
B9007-37	3/3	0.0	5.5	0	
B9009-11		1.5	6.5	0	
B9012-2		7.0	4.0	7	
B9014-8		1.5	4.5	0	
B9014-11	2/3	0.0	7.5	0	
B9014-12	3/3	4.5	6.0	0	
B9014-15	2/2	0.5	5.5	0	
B9014-22	3/2	2.0	4.5	2	
B9014-33		0.0	5.0	7	
B9015-5	3/3	2.0	5.0	10	
B9015-8	2/3	1.0	3.5	6	
B9015-16		3.0	7.5	0	
B9016-1	2/4	8.5	6.0	0	
B9016-2		1.5	3.0	0	
B9016-3		2.5	2.0	7	
B9016-7		4.0	7.0	0	
B9016-16	3/4	8.0	3.0	0	
B9016-18		3.5	2.5	0	
B9016-20	2/4	8.5	5.0	0	
B9016-21	3/3	2.5	3.0	33	

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B9016-23		0.0	5.5	39	
B9017-14	3/5	0.0	4.0	0	
B9018-10	3/5	1.5	3.5	53	
B9018-12	4/4	0.0	7.0	0	
B9018-21		0.5	6.0	0	
B9018-22		0.5	5.5	9	
B9019-1		0.0	5.0	36	
B9019-7		0.0	6.5	0	
B9019-8	2/3	0.5	6.5	2	
B9019-14	3/5	0.0	6.0	15	
B9020-4		0.0	4.5	0	
B9020-6	2/2	4.0	5.0	40	
B9020-8	2/3	0.0	5.0	32	
B9020-9	T/2	0.5	8.0	0	
B9020-10	1/3	8.0	9.0	5	
B9020-11		2.0	3.5	21	
B9020-12	2/2	0.0	4.0	0	
B9020-13	2/3	0.0	6.5	0	
B9020-17	2/2	4.0	7.5	0	
B9020-18	2/3	0.0	6.0	0	
B9020-23	2/3	0.0	3.5	12	
B9021-1		0.0	1.0	4	
B9021-2		0.5	3.5	43	
B9021-5		0.0	3.5	0	
B9021-9	3/4	0.0	1.0	7	
B9021-20		0.0	5.0	0	
B9021-21	2/2	2.0	5.5	73	
B9023-5		8.0	6.0	16	
B9023-8	3/3	7.5	4.0	0	
B9023-10		0.5	5.5	29	
B9023-11	3/3	8.5	4.5	0	
B9023-17	3/3	0.0	2.0	0	
B9023-18	2/3	8.5	5.5	29	
B9024-7	2/3	8.0		0	
B9024-9		8.5	9.0	0	
B9024-10		0.0	7.0	0	
B9024-19	3/2	8.0	6.0	0	
B9024-21	3/3	7.5	7.0	0	
B9024-22		0.0	9.0	0	
B9024-23		0.0	7.5	0	
B9024-24	1/3	0.0		0	
B9024-25	5/5	0.0	2.5	0	
B9024-27	3/4	5.0	3.0	0	
B9024-31		0.0		0	
B9024-33		0.0	7.0	0	
B9024-38	2/3	0.0	4.5	10	
B9024-39		5.0	4.0	0	
B9024-40	2/4	4.0	9.0	27	

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B9024-42		0.0	2.0	0	
B9024-45	3/3	6.5	6.5	0	
B9025-1	4/4	1.5	5.5	0	
B9025-4		1.5	9.0	0	
B9026-1		0.0	8.5	14	
B9026-7		1.5	7.0	2	
B9026-13		0.0		0	
B9027-4	4/4	0.0	4.5	0	
B9028-4		0.0	7.5	0	
B9028-5		4.0	3.0	15	
B9028-6	4/4	4.0	4.0	0	
B9028-23	2/4	4.0	4.0	0	
B9028-25	2/3	0.0	3.0	0	
B9028-28		0.0	3.5	0	
B9028-29		0.0	3.0	0	
B9028-31	2/2	8.5	4.0	0	
B9028-33		0.0	8.0	0	
B9029-8		0.0	9.0	0	
B9030-2		0.0	8.5	0	
B9030-4		1.0	9.0	0	
B9030-5		1.0	6.5	0	
B9030-8		0.0	9.0	0	
B9031-8		0.0	5.5	18	
B9031-9		8.0	6.0	0	
B9032-2		8.5	3.0	33	
B9032-3		8.0	6.0	0	
B9032-5	1/3	0.0	2.5	0	
B9032-6	2/3	5.0	7.5	0	
B9032-8		7.0	8.5	0	
B9032-13		8.0	8.0	0	
B9032-15		0.0	4.0	0	
B9033-1		3.5	8.5	0	
B9033-3	1/3	1.0	7.0	18	
B9035-7		8.0	8.0	0	
B9035-8		6.0	4.5	17	
B9040-2		8.0	4.5	32	
B9040-3		8.0	5.5	22	
B9040-5		7.5	6.0	0	
B9040-6		0.5	5.0	44	
B9040-7		8.0	6.5	8	
B9040-10	3/4	9.0	3.5	18	
B9040-12	2/3	3.5	2.5	7	
B9040-13		0.0	6.5	0	
B9040-15		0.0	4.5	0	
B9040-16		0.0	7.0	0	
B9041-3		3.0	6.0	0	
B9041-4		1.0	4.5	0	
B9041-7		5.5	4.0	5	

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B9041-9		5.5	6.0	39	
B9041-10	3/2	4.5	6.5	0	
B9041-11		7.5	7.5	36	
B9041-15		7.5	7.5	4	
B9041-16		5.5	8.0	50	
B9041-18	3/5	6.0	3.5	15	
B9042-4	2/4	7.5	3.0	23	
B9042-5		7.5	4.0	3	
B9042-7	2/2	7.0	2.0	0	
B9043-3		2.0	5.5	14	
B9043-10		2.0	6.5	0	
B9043-19		0.0	7.5	17	
B9043-24		0.0	6.0	35	
B9044-5	3/4	1.0	4.5	43	
B9044-12		0.0	5.0	5	
B9045-4		0.0	3.5	23	
B9045-10	4/4	2.0	6.0	28	
B9045-21	3/4	0.0	5.5	13	
B9046-3		0.0	1.5	12	
B9046-5		0.0	3.0	3	
B9046-7		1.0	8.5	17	
B9047-2	3/2	0.0	2.0	3	
B9047-3	2/3	0.5	4.0	25	
B9048-7	2/3	3.5	4.5	12	
B9049-4		9.0	5.0	54	
B9050-1		0.5	5.0	75	
B9050-4	4/4	0.5	5.5	0	
B9050-5	4/3	0.0	3.5	3	
B9050-7	2/4	8.0	5.0	0	
B9050-14		0.5	2.0	24	
B9052-2	1/2	1.0	5.0	0	
B9052-7		0.0	4.0	0	
B9053-6	2/4	1.0	1.0	6	
B9054-7	1/4	2.0	7.5	0	
B9055-12		3.0	6.0	13	
B9056-1		0.0	3.0	8	
B9058-5		1.0	9.0	9	
B9061-2	2/3	0.0	4.0	11	
B9062-2	2/3	0.0	3.0	5	
B9062-5	2/3	0.0	5.0	3	
B9062-8		3.0	5.5	52	
B9062-9	1/3	1.0	4.5	20	
B9063-4		2.0	1.0	0	
B9063-7		0.5	3.5	0	
B9063-8	1/3	0.0	3.0	0	
B9063-12	1/2	0.0	1.5	0	
B9063-13		0.5	3.5	28	
B9063-15	2/3	0.5	3.5	0	

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B9064-3	3/3	0.0	5.5	0	
B9064-9		1.0	7.5	0	
B9064-10	2/2	1.5	8.5	0	
B9064-12		0.0	7.0	0	
B9065-1		0.0	6.5	11	
B9067-6	3/4	2.5	7.5	0	
B9067-8		0.0	8.0	0	
B9067-9	3/3	3.5	8.0	0	
B9068-2		0.0	7.5	30	
B9069-1	3/4	8.5	5.0	0	
B9069-3	2/3	8.0	4.5	16	
B9069-4	3/3	7.0	5.0	0	
B9069-8	3/4	0.5	6.5	0	
B9069-10		1.0	3.0	16	
B9069-16		7.0	4.0	0	
B9069-17		1.0	3.5	32	
B9069-18	4/3	3.0	9.0	0	
B9069-20	2/2	7.0	5.5	46	
B9070-5		7.0	5.5	2	
B9070-10	3/4	0.0	6.5	2	
B9070-12		1.0	3.5	3	
B9071-1	4/3	2.0	6.5	0	
B9071-4	2/4	3.5	6.0	0	
B9071-5	3/4	0.5	5.5	0	
B9072-3	3/3	6.5	7.5	0	
B9072-7		2.0	5.0	23	
B9073-2	2/5	1.5	4.0	32	
B9073-3	1/3	6.5	5.5	9	
B9073-4	2/4	7.0	8.0	2	
B9074-5	3/4	6.0	6.5	0	
B9076-3	2/4	0.0	6.5	0	
B9079-6		0.5	5.0	28	
B9080-2	4/4	0.5	5.5	9	
B9080-6	3/4	0.0	4.0	17	
B9080-7		0.5	5.5	0	
B9082-5	2/3	8.5	4.5	36	
B9082-8		8.0	4.5	0	
B9087-1		1.5	8.0	19	
B9087-3		0.0	8.0	0	
B9087-4		1.0	7.0	0	
B9087-14		0.0	7.0	18	
B9088-8		0.0	6.0	15	
B9089-4		3.0	6.5	0	
B9089-14		1.0	3.5	0	
B9090-2		0.0	7.0	7	
B9090-3		0.0	5.0	0	
B9090-7		0.0	5.5	8	
B9090-15		0.0	5.5	0	

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B9090-16	3/4	0.0	3.5	0	
B9090-18	3/4	1.0	5.5	19	
B9090-20	1/4	7.0	5.5	0	
B9090-26		2.0	5.5	0	
B9091-2	3/4	0.5	6.0	31	
B9091-3	3/4	0.0	8.0	0	
B9092-4		0.5	7.5	0	
B9092-5		0.0	2.5	47	
B9092-9	4/5	0.0	7.0	0	
B9095-5		0.0	3.0	0	
B9096-3	2/3	0.5	4.5	0	
B9096-5		0.5	5.5	2	
B9096-6	2/3	0.0	8.0	4	
B9096-8	1/3	0.0	7.0	20	
B9096-9	2/4	0.0	6.0	5	
B9096-10		0.0	5.5	0	
B9096-12		0.0	5.0	0	
B9097-1	1/3	0.0	4.5	9	
B9097-4		0.5	4.5	9	
B9097-5	1/3	0.0	3.5	0	
B9097-6		0.0	8.5	11	
B9097-7	2/3	0.0	6.0	12	
B9097-9		0.0	6.0	0	
B9097-11		0.5	8.0	6	
B9097-12	3/4	0.0	7.5	12	
B9097-14	3/3	0.0	6.0	19	
B9097-16		2.5	6.5	0	
B9098-3		0.0	1.5	0	
B9098-4		8.5	6.5	0	
B9099-1		0.0	5.0	0	
B9099-5	1/3	0.0	4.5	3	
B9099-7		2.0	7.5	0	
B9099-10		0.0	5.0	24	
B9099-11		1.0	5.0	0	
B9099-12		0.0	3.5	0	
B9099-13	2/3	0.0	5.5	0	
B9100-5		0.5	4.5	0	
B9100-7	2/4	0.0	2.5	3	
B9100-9	2/5	0.0	7.5	0	
B9100-11		0.5	4.5	3	
B9100-12		0.0	5.0	2	
B9100-13		1.5	3.0	12	
B9100-14		0.0	4.5	0	
B9100-15		0.0	3.5	0	
B9100-16	3/4	1.0	3.5	0	
B9100-18	2/5	0.5	5.5	16	
B9101-2		1.5	7.0	0	
B9101-7		0.5	4.5	0	

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B9102-1		8.5	7.5	0	
B9102-5		0.0	7.5	0	
B9102-8		2.5	4.5	0	
B9102-10		0.0	7.5	0	
B9102-11		1.0	6.0	3	
B9102-12		7.5	7.5	0	
B9102-13		1.5	4.0	0	
B9103-4		0.0	5.0	9	
B9104-1	3/4	0.0	6.0	0	
B9104-3	3/4	0.0	4.0	0	
B9104-5		7.5	4.0	0	
B9104-6		0.0	7.5	16	
B9104-8	2/2	8.0	6.0	19	
B9104-11		0.0	5.0	0	
B9105-2		0.0	5.5	21	
B9105-4		0.0	6.0	6	
B9105-8		0.0	4.5	0	
B9112-1		0.0	5.5	11	
B9114-1		1.5	4.5	9	
B9114-2	3/5	0.5	6.5	0	
B9114-3	T/2	0.5	7.0	0	
B9114-4	1/2	0.5	6.0	7	
B9114-6		2.0	4.5	0	
B9114-7	1/3	3.0	4.5	7	
B9114-8		2.0	4.0	0	
B9114-9	1/4	8.0	3.5	0	
B9114-10	1/4	3.0	6.0	0	
B9114-11		2.0	4.5	0	
B9115-2		0.0	3.0	0	
B9115-4	2/4	7.5	5.5	7	
B9116-1	T/2	0.0	1.0	0	
B9116-3		0.0	4.5	40	
B9116-4		2.0	6.0	0	
B9116-5		0.0	4.5	15	
B9116-6	1/3	0.0	4.0	24	
B9117-2		3.0	6.0	0	
B9117-5		0.0	3.0	14	
B9117-6		2.0	5.5	0	
B9118-4		0.5	5.0	25	
B9118-5	3/5	4.0	5.5	26	
B9119-5	3/5	7.0	8.0	0	
B9119-7		7.0	8.5	0	
B9119-9		7.5	8.5	10	
B9119-10		7.5	8.5	8	
B9119-12	3/5	7.5	8.5	10	
B9121-11		3.5	7.5	11	
B9122-1		2.0	8.5	4	
B9122-4		0.5	8.0	5	

Presque Isle Table 1. Pedigrees tested in disease trials. 1977. cont.

Pedigree	Scab	Late Blight	Verticillium	% Pinkeye	Early Blight
B9123-9		0.0	6.0	17	
B9123-10		8.5	4.0	34	
B9124-1		0.0	2.0	13	
B9124-2		7.5	3.5	16	
B9124-3	3/3	8.0	2.5	21	
B9124-4		1.5	2.0	8	
B9124-11		0.0	1.5	0	
B9124-13		0.5	5.0	3	
B9124-15		0.5	8.5	0	
B9126-11		8.5	5.0	0	
B9126-13		1.5	8.0	0	
B9126-14		1.0	6.0	0	
Abnaki			9.0	1	
Cherokee	1.5/2		5.0	20	
Kennebec	3/3	2.5	2.5	20	8.2
Sebago		2.5	6.2	24	
Atzimba		9.0			
Superior	1.5/2.3		2.7	15	
Russet Burbank	1.2/2.2		6.0	2	
Atlantic	1/2				
Norland	2/2				
Katahdin	3.5/3.5		4.0	18	
Norgold Russet	2/2				7.0

BELTSVILLE AGRICULTURAL RESEARCH CENTER (BARC), BELTSVILLE, MARYLAND

Robert W. Goth and Raymon E. Webb

Late Blight Evaluations

Clones: One hundred twenty Advanced Breeding Line seedlings, plant introductions, and cultivars were tested for resistance to Race 1,2,3,4 of *Phytophthora infestans*. All tubers were planted 1/18/77, inoculated on 2/24/77 and on 3/3/77. Final notes were taken on 3/14/77. Each entry was replicated three times. The plants were rated on a scale of 0-9, 0=dead - 9=no symptoms. Of these 120 lines only six clones were selected for further testing in 1978, and one clone (B7858-6) had resistance equal to or greater than Atzimba.

Seedlings: A total of 51 thousand potato seedlings from the breeding program were tested in the greenhouse for resistance to Race (1,2,3,4) of *P. infestans*. Only sixteen had adequate resistance to warrant further evaluation in the greenhouse, growth chamber and in the field. Seedlings continue to be evaluated for multigenic late blight resistance.

INTER-REGIONAL POTATO INTRODUCTION PROJECT (IR-1)

R. W. Ross and R. E. Hanneman, Jr.

Introduction of New Stocks. Seventy new stocks were received from two countries (Peru, U.S.S.R.). All were true seed introductions and most were non-cultivated Peruvian species provided by the collector, C. M. Ochoa.

Preservation and Increase of Stocks. Approximately 90 percent of the introductions now contained in the collection are maintained as true seed. Satisfactory seed increases of 134 species introductions and intraspecific hybrids were obtained under glass, fiberglass or screen. Recently-harvested seed samples of 110 species introductions were packaged for storage in the National Seed Storage Laboratory.

A fifty-seedling sample of 142 seed increase lots were grown to detect mechanic admixtures that may happen in the course of the extraction and packaging process. Germination percentages of 1,624 seed lots 2-20 years old were determined.

Classification. Two hundred fifty-seven herbarium specimens (100 with dissected corollas) were collected and prepared from seedling populations of 76 species introductions. The majority were specimens requested by *Solanum* taxonomists C. M. Ochoa and K. A. Okada for further study and inclusion in their herbaria.

Professors Ochoa and Okada spent two weeks here examining seedling progenies of collections with questionable or provisional classifications to substantiate or disprove the collection site determinations.

More than 4,000 herbarium mounts, representing specific and interspecific variability of 92 *Solanum* species, are available for taxonomic use.

Distribution of Stocks. Seed and tuber shipments were sent to potato workers in 22 states within this country and to those in 22 other countries. Shipments included 2,816 seed and 1,618 tuber samples of species introductions, and three seed and 383 tuber samples of germplasm developed by the cooperative USDA-Wisconsin Genetics and Cytogenetics Project, involving species introductions.

A mimeographed listing of 197 species introductions available in the form of tuber families (mainly for the benefit of those without adequate greenhouse facilities) was distributed to 194 potato workers.

Evaluation of Stocks. Seedling populations of some 900 species introductions, many recent accessions, were evaluated in the field for tolerance to freezing temperatures and for tuberization response to length of day. The somatic chromosome numbers of 128 species introductions were determined in the laboratory.

The more-recent accessions are being steadily evaluated for characters of economic importance through the cooperative efforts of state, federal, and foreign laboratories.

Usefulness of findings. The major objective of the Potato Introduction Project is to promote and facilitate the improvement of the commercial potato in the United States by providing a readily available reservoir of useful breeding stocks. Breeders are constantly searching for new sources of superior germplasm and are conducting incessant researches to incorporate desirable new genes into adapted commercial varieties. Accomplishment of the major objective of this program must be measured largely by the success with which new, improved varieties meet the needs of commercial production.

Five new potato varieties (Oneida, Butte, Campbell 11, Campbell 12, Campbell 13) were released for commercial production in 1976-1977. Each pedigree involves six to eight foreign introductions. One hundred thirty-nine of the 143 potato varieties developed and released in the United States since 1932 have two or more foreign introductions in their pedigree. These varieties presently compose about 65% of the annual seed potato production in the United States.

Basic research programs conducted in several states and other countries continue to provide information concerning the potential value and diversity of the *Solanum* species, and consequently the knowledge necessary for more effective utilization of the IR-1 germplasm collection. In 1977, 26 papers, 20 abstracts, and 5 theses reported the use of *Solanum* introductions.

NORTH CENTRAL REGIONAL POTATO TRIALS - 1977

R. H. Johansen and Cooperators[1/]

The 1977 North Central Regional Trial made the twenty-seventh year the trial has now been conducted. There are now 11 states and two Provinces in Canada participating in the trial and with Nebraska planting two trials, a summer and a fall trial, there is a total of 14 locations. No data was obtained from the Louisiana trial this year due to poor weather and growing conditions. After an absence of four years, Indiana again participated in the trial this year.

A recent potato cultivar introduction that has been tested in the North Central Regional Trial is:

Progeny No.	Year Released	Released By	Released Name	Parentage
Wisc. 623	1976	Wisconsin	Oneida	55-232.58 x W231

Environmental Conditions. Soil type ranged from clay loam to coarse sand. The Indiana trial was grown on muck soil.

Cultural Practices. Fertilizer applications, irrigation, spray programs, vine killing, spacing, etc., were based on local conditions. Thiodan, Monitor, Temik 15G, Lannate, Metosystox R, Diazinon, Sevin and Di-Syston were used as insecticides. Fungicides used were Difolatan, Guthion, Bravo, Benlate, Polyram, Diathane M45, Manzate and Kocide. For weed control Eptam, Sencor, Lasso, Dacthal, Lorox, Treflan and Maloran were used. Vines were killed by either roto beating or by chemicals. Vine killers used were Regalone 'A', Dow General and Denitro.

State or Province	Date Planted	Date Harvested	Total Days To Harvest
Alberta	5/6	9/21	139
Manitoba	5/13	9/13	129
Indiana	5/3	9/20	142
Kansas	3/31	7/28	120
Michigan	5/3	9/14	135
Missouri	4/7	8/15	131
Minnesota	4/20	8/30	132
Nebraska (summer)	4/8	8/3	122
Nebraska (fall)	5/18	9/22	133
North Dakota	5/17	9/12	119
Ohio	5/13	10/3	144
South Dakota	4/20	9/6	142
Wisconsin	5/3	9/20	140

[1] Indiana, H. Erickson; Kansas, J. Greig; Louisiana, J. Fontenot; Michigan, N. Thompson; Minnesota, F. Lauer; Missouri, V. Lambeth; Nebraska, R. O'Keefe; North Dakota, R. H. Johansen; Ohio, A. R. Mosley; South Dakota, P. Prashar; Wisconsin, J. Shoeneman, D. Kichefski and S. Peloquin; USDA, R. Webb; Alaska, C. Dearborn; Alberta, S. Molnar; Manitoba, W. A. Russell, USDA-Idaho, J. Pavek.

Weather conditions were again quite erratic in 1977. It was quite wet in Kansas, Missouri and Louisiana at planting time. Kansas experienced three five inch rains during the growing season. Some of the northern states and Ohio as well as the two Canadian Provinces experienced dry conditions early in the season but for the most part ample moisture was acquired later in the season. Nebraska, South Dakota, and North Dakota had a fair amount of moisture throughout the growing season. It was necessary to irrigate in Wisconsin, Nebraska, Minnesota, Michigan, Indiana and Alberta. Temperatures varied from being very warm in Indiana, Michigan, Nebraska and Wisconsin to quite cool to moderately warm in North Dakota, Ohio and Alberta.

Entries. Entries were received from North Dakota, Nebraska, Alaska, Aberdeen, Idaho (USDA), Louisiana, Minnesota and Wisconsin. North Dakota again supplied the check cultivars Norland, Red Pontiac, Russet Burbank and Norchip. Kansas did not receive the Idaho (USDA) entries.

Yield. Total and U.S. No. 1 yields are reported in North Central Tables 1 and 2. Wisconsin, Minnesota and Alberta produced the highest yields. Wisconsin had an average total yield of 680 cwt per acre for the 22 entries tested.

Red Pontiac, with an average total yield of 504 cwt per acre was the highest yielding entry in trial again this year. This cultivar consistently is the highest yielding entry in the trial and to date not cultivar or advanced selection in trial has reached the yielding potential of Red Pontiac. Other high yielding entries were A68678-1, Norchip, ND8891-3, Neb. 17.67-1, La 01-70, Wisc. HS-17, Wisc. 738 and Neb. 18.66-1.Line A68678-1 is an outstanding russet selection from Idaho that probably will be introduced as a named cultivar within a year or so. It is susceptible to hollow heart (North Central Table 7).

Percent U.S. No. 1. Percent U.S. No. 1 is found in North Central Table 3. Most cultivars produced fairly good percent U.S. No. 1, ranging from 71.4 to 88.0 percent.

Maturity. The earliest entry in trial was Norland and the latest was Russet Burbank. Maturity readings are found in North Central Table 4.

Total Solids. Total solids are found in North Central Table 5. Several entries produced total solids for the 13 locations averaging 19.0 percent or better. They were Wisc. 723, Wisc. 738, A68678-1 and Norchip (North Central Table 5). Other entries producing fairly high total solids were ND8891-3, La 01-70 and Russet Burbank. Red Pontiac, Norland, Minn. 8020, Wisc. HS-17, Minn. 7926, Neb. 17.67-2 and Neb. 2.67-1 all produced quite low percent total solids.

Scab Reaction. The highest incidence of scab was found in the trial planted at Alliance, Nebraska (fall production) and the lowest incidence of scab was found in the Minnesota trial (North Central Table 6).

Internal and External Defects. Grade defects are found in North Central Table 7. A particular weakness of a selection or cultivar is starred only to call it to the attention of the person responsible for the selection development and release as a named cultivar. Both of the Idaho (USDA) selections had a fairly high incidence of hollow heart and Russet Burbank had a high incidence of second growth. Norchip had some growth cracking and AK24-3 had a fair amount of second growth.

Chip Quality. All states except Indiana, Kansas, Missouri and South Dakota reported chip quality (North Central Table 8). Lines ND8850-2, Minn. 7973, Minn. 8020, Wisc. 723, ND8891-3 all produced chip quality quite comparable or in some cases better than Norchip. At some locations A68678-1, Wisc. 738, La. 92-157 and Neb. 17.67-1 produced fairly light colored chips.

Overall Merit Ratings[1/]. Merit Ratings are presented for 1975, 1976 and 1977.

Cultivar or Selection	Total Points		
	1975	1976	1977
1. A68678-1			25
2. Norchip	19(3)[2/]	13(5)[2/]	23
Minn. 7973			23
3. Wisc. 738			22
4. ND8891-3	16(4)[2/]	45(1)[2/]	14
5. Wisc. HS-17			13
Wisc. 723			13

1/ Merit Ratings

Rating	Points
1	5
2	4
3	3
4	2
5	1

2/ Ranking that year

North Central Table 1. Total Yield (Cwt/Acre)

Cultivar Early to Med. Early	Alberta	Manitoba	Ind.	Kansas	Mich.	Mo.	Minn.	Neb. Late Summer	Neb. Fall	N.Dak.	Ohio	S.Dak.	Wisc.	Ave.
ND8914-5Russ	235	95	314	52	58	122	346	67	195	128	215	179	315	178.54
Neb. 2.67-1	501	211	446	221	195	211	455	140	376	288	493	354	667	350.62
Neb. 18.66-1	347	261	472	257	200	219	471	241	385	252	508	407	723	364.85
Minn. 8020	469	174	367	113	141	168	527	116	418	282	340	311	516	303.23
Norland	499	205	280	114	145	168	420	133	418	223	334	306	511	288.92
Medium to Late														
Norchip	551	240	368	246	230	220	484	207	514	294	415	454	646	374.54
AK 24-3	489	301	331	185	239	104	521	114	404	168	499	441	663	343.00
A68678-1	471	291	340		279	253	497	177	369	239	506	444	865	394.25
A6680-5	427	241	401		166	171	465	157	455	218	378	463	542	340.33
ND8891-3	558	231	351	219	251	186	463	166	420	208	459	413	811	364.31
ND8850-2	390	206	367	226	152	202	434	171	349	217	290	350	646	307.69
Neb. 17.67-1	461	312	220	163	347	169	481	103	480	221	285	407	861	346.92
La 11-118	375	245	330	208	343	84	557	166	304	209	447	377	740	337.31
La 01-70	451	325	432	241	359	252	468	136	429	258	407	392	582	364.00
La 92-157	407	238	365	191	300	142	448	136	426	199	514	261	683	331.54
Minn. 7926	375	207	318	185	151	166	442	139	352	259	261	319	651	294.23
Minn. 7973	437	252	173	219	171	172	425	159	448	245	309	332	528	297.69
Wisc. HS-17	561	241	355	259	261	263	560	95	403	204	614	442	787	388.08
Wisc. 723	437	181	410	200	259	137	459	133	448	180	280	391	695	323.85
Wisc. 738	532	302	334	211	262	258	505	142	362	217	507	401	810	372.54
Red Pontiac	864	378	600	292	432	234	600	248	487	328	643	518	926	503.85
Russet Burbank	536	272	410	170	288	227	475	173	396	165	509	382	784	368.23
AVERAGE	472	246	363	199	238	188	477	151	402	227	419	379	680	

North Central Table 2. U.S. No. 1 Yield - 2" Minimum diameter (Cwt/Acre)

Cultivar	Alberta	Manitoba	Ind.	Kansas	Mich.	Mo.	Minn.	Neb. Late Sum.	Neb. Fall	N.Dak.	Ohio	S.Dak.	Wisc.	Ave.
Early to Med. Early														
ND8914-5Russ	178	61		10	46	118	326	25	138	100	200	167	237	133.83
Neb. 2.67-1	367	151		125	169	205	445	88	323	271	394	348	583	289.08
Neb. 18.66-1	299	220		220	193	215	461	186	281	236	371	392	671	312.08
Minn. 8020	369	100		72	120	163	518	78	309	265	316	205	460	247.92
Norland	377	154		80	127	166	412	86	338	208	304	298	456	250.50
Medium to Late														
Norchip	420	181		174	206	214	468	149	324	265	386	450	599	319.67
AK 24-3	353	265		144	224	101	501	84	327	145	264	421	644	289.42
A68678-1	382	248			274	248	478	126	255	199	415	436	835	354.18
A6680-5	332	163			152	167	439	82	323	190	299	457	473	279.73
ND8891-3	390	192		112	236	179	454	91	298	175	390	407	759	306.92
ND8850-2	184	133		90	114	192	387	75	216	177	252	327	505	221.00
Neb. 17.67-1	241	279		122	332	164	473	85	384	204	225	399	854	313.50
La 11-118	279	204		154	321	83	533	113	252	182	340	370	675	292.17
La 01-70	355	259		140	348	241	452	82	378	237	370	385	550	316.42
La 92-157	320	201		150	289	141	432	106	315	183	483	254	653	293.92
Minn. 7926	317	160		132	137	164	431	94	302	242	232	312	611	261.17
Minn. 7973	375	211		171	161	171	421	110	278	228	256	327	507	268.00
Wisc. H S-17	378	144		119	237	240	532	44	347	173	577	421	675	323.92
Wisc. 723	313	145		118	252	136	449	89	369	167	272	384	672	280.50
Wisc. 738	448	249		167	247	254	496	106	304	207	416	392	784	339.17
Red Pontiac	629	324		233	423	229	588	193	277	296	463	515	895	422.08
Russet Burbank	341	163		100	256	222	462	81	150	121	387	378	709	280.83
AVERAGE	348	192		132	221	182	462	97	297	203	346	366	628	

North Central Table 3. Average Percent U.S. No. 1 over 2" diameter.

Cultivar	Alberta	Manitoba	Ind.	Kansas	Mich.	Mo.	Minn.	Neb. Late Summer	Neb. Fall	N.Dak.	Ohio	S.Dak.	Wisc.	Ave.
Early to Med. Early														
ND8914-5Russ	75	64		20	79	97	94	38	71	78	93	93	75	73.1
Neb. 2.67-1	73	71		57	87	97	98	63	86	94	80	98	87	82.6
Neb. 18.66-1	86	84		87	97	98	98	77	73	94	73	96	93	88.0
Minn. 8020	78	58		64	85	97	98	67	74	94	93	98	89	82.9
Norland	75	75		70	88	99	98	65	81	93	91	97	89	85.1
Medium to Late														
Norchip	76	75		71	90	97	97	72	63	90	93	99	93	84.7
AK 24-3	72	88		79	94	97	96	74	81	86	53	95	97	84.3
A68678-1	81	85			98	98	96	71	69	83	82	98	97	87.1
A6680-5	77	68			92	98	94	52	71	87	79	99	87	82.2
ND8891-3	69	83		51	94	96	98	55	71	84	85	98	94	81.5
ND8850-2	47	65		40	75	95	89	44	62	82	87	93	78	71.4
Neb. 17.67-1	52	89		75	96	97	98	83	80	92	79	97	99	86.4
La 11-118	74	83		74	94	99	96	68	83	87	76	98	91	85.3
La 01-70	78	80		58	97	96	97	60	88	92	91	98	95	85.8
La 92-157	78	85		79	96	99	96	78	74	92	94	97	96	88.7
Minn. 7926	84	77		71	91	99	97	68	86	93	89	98	94	87.3
Minn. 7973	86	84		78	94	99	99	69	62	93	83	98	96	86.8
Wisc. HS-17	67	60		46	91	91	95	46	86	85	94	95	86	78.5
Wisc. 723	72	80		60	97	99	98	67	83	93	97	98	97	86.8
Wisc. 738	84	82		79	94	98	98	75	84	95	82	98	97	88.8
Red Pontiac	73	86		80	98	98	98	78	57	90	72	99	97	85.5
Russet Burbank	64	60		59	89	98	97	47	38	73	76	99	90	74.2
AVERAGE	74	77		65	92	97	97	64	74	89	84	97	92	

North Central Table 4. Maturity Classification[1/]

Cultivar	Alberta	Manitoba	Ind.	Kansas	Mich.	Mo.	Minn.	Neb.[2/] Late Summer	Neb. Fall	N.Dak.	Ohio	S.Dak.	Wisc.	Ave.
Early to Med. Early														
ND8914-5Russ	2.0	1.0	1.0	1.0	1	2.5	1.0		1.0	2.0	2.0	2.0	3.0	1.63
Neb. 2.67-1	2.0	2.0	3.5	2.7	3	2.5	1.0		1.0	2.0	2.0	2.0	3.0	2.23
Neb. 18.66-1	1.0	3.0	3.5	3.3	3	2.5	1.5		3.0	2.0	2.0	2.0	2.5	2.44
Minn. 8020	1.0	1.0	2.0	1.5	1	2.5	1.3		1.0	1.5	1.5	1.5	2.5	1.53
Norland	2.0	1.0	1.5	1.0	1	1.5	1.0		1.0	2.0	1.0	2.0	2.0	1.42
Medium to Late														
Norchip	2.0	2.0	3.0	4.2	2	4.0	2.0		3.0	3.0	2.5	3.0	3.0	2.81
AK 24-3	4.0	5.0	4.7	4.8	5	4.0	4.5		4.0	4.0	5.0	4.0	5.0	4.50
A68678-1	4.0	4.0	4.0		4	4.0	2.3		4.0	4.0	4.0	4.0	4.0	3.85
A6680-5	4.0	3.0	2.7		3	4.0	2.0		3.0	4.0	4.0	4.0	5.0	3.52
ND8891-3	2.0	4.0	4.2	3.2	5	3.5	2.0		3.0	3.0	4.0	3.0	4.0	3.41
ND8850-2	2.0	2.0	1.5	2.7	3	3.5			3.0	3.0	3.0	3.0	3.0	2.70
Neb. 17.67-1	4.0	5.0	4.2	4.5	4	3.5	3.8		3.0	3.0	3.0	3.0	3.0	3.67
La 11-118	1.0	5.0	4.2	3.3	5	4.5	2.8		4.0	3.0	3.0	3.0	3.5	3.53
La 01-70	3.0	4.0	4.2	3.6	4	4.0	2.5		2.0	4.0	3.0	4.0	4.0	3.53
La 92-157	3.0	3.0	4.0	2.7	5	4.0	1.0		3.0	3.0	3.0	3.0	3.0	3.14
Minn. 7926	2.0	2.0	2.0	2.2	3	3.5	2.0		2.0	3.0	3.0	3.0	4.0	2.64
Minn. 7973	2.0	2.0	1.5	3.0	3	3.5	1.8		3.0	3.0	3.0	3.0	3.5	2.69
Wisc. HS-17	3.0	3.0	4.5	3.0	4	3.5	1.3		3.0	3.0	4.0	3.0	4.5	3.32
Wisc. 723	3.0	4.0	3.7	3.8	4	3.8	2.3		2.0	3.0	4.0	3.0	5.0	3.47
Wisc. 738	2.0	4.0	5.0	3.7	4	3.8	3.3		4.0	3.0	4.0	3.0	3.0	3.57
Red Pontiac	4.0	4.0	4.2	4.0	5	3.5	2.3		4.0	4.0	3.0	4.0	4.0	3.83
Russet Burbank	5.0	4.0	4.7	4.7	4	5.0	3.3		4.0	5.0	5.0	5.0	5.0	4.56

1/
1. Very Early - Norland maturity
2. Early - Irish Cobbler maturity
3. Medium - Red Pontiac maturity
4. Late - Katahdin maturity
5. Very late - Russet Burbank maturity

2/ Vines killed before reading

North Central Table 5. Percent Total Solids.

Cultivar Early to Med. Early	Alberta	Manitoba	Ind.	Kansas	Mich.	Mo.	Minn.	Neb. Late Summer	Neb. Fall	N.Dak.	Ohio	S.Dak.	Wisc.	Ave.
ND8914-5Russ	19.5	19.5	15.4	16.8	16.1	15.6	15.4	16.7	17.7	19.7	16.9	17.7	14.3	17.02
Neb. 2.67-1	20.5	20.3	15.4	17.6	16.5	15.0	15.2	17.1	16.7	18.8	15.9	16.4	14.5	16.92
Neb. 18.66-1	18.0	21.8	15.4	17.2	17.0	14.3	17.1	16.7	17.1	19.7	16.5	19.3	17.1	17.48
Minn. 8020	17.8	18.5	15.4	16.6	15.7	14.3	15.0	14.8	16.0	19.2	16.5	17.1	13.5	16.18
Norland	17.8	18.6	15.4	16.8	15.4	14.3	14.1	14.5	16.2	19.7	16.5	16.6	13.7	16.12
Medium to Late														
Norchip	22.8	22.7	16.5	20.4	18.9	16.5	18.2	18.8	20.1	21.4	17.0	20.5	17.5	19.33
AK 24-3	19.9	19.3	15.4	17.0	17.6	14.3	19.7	15.2	21.4	18.4	17.5	18.5	18.8	17.92
A68678-1	22.0	22.6	15.4		19.4	15.6	19.2	17.5	22.2	20.3	18.0	20.5	20.9	19.47
A6680-5	18.5	21.0	15.4		16.2	14.3	16.0	16.2	17.3	18.0	17.4	19.6	15.6	17.13
ND8891-3	21.5	22.9	15.6	18.7	18.2	15.6	17.5	17.7	20.3	19.0	18.0	18.3	18.6	18.61
ND8850-2	22.7	22.4	15.4	18.9	17.5	14.3	17.8	16.5	17.3	20.7	16.7	18.8	14.3	17.95
Neb. 17.67-2	18.0	18.6	15.4	17.9	15.8	15.8	18.4	14.3	18.0	15.4	15.4	18.8	16.9	16.82
La 11-118	19.0	20.8	16.2	20.0	18.4	14.3	17.5	17.7	20.3	19.0	17.4	15.5	16.7	17.91
La 01-70	22.0	22.0	15.4	19.4	18.6	14.8	20.7	16.5	18.6	20.1	17.4	19.8	18.6	18.76
La 92-157	21.4	21.7	15.4	18.1	17.3	14.3	17.1	16.2	18.2	19.0	17.5	17.8	17.3	17.79
Minn. 7926	18.3	20.2	15.4	17.9	16.5	14.3	14.8	17.3	17.1	18.8	16.3	17.7	15.0	16.89
Minn. 7973	21.5	21.2	15.4	19.0	16.2	14.3	15.8	16.5	17.5	20.3	16.5	19.1	15.4	17.59
Wisc. HS-17	19.0	19.4	15.4	16.1	15.0	14.3	17.1	15.6	16.0	18.8	16.9	16.6	15.0	16.55
Wisc. 723	24.2	23.8	16.0	20.0	19.4	15.6	19.5	18.0	21.8	21.2	16.9	20.8	20.7	19.84
Wisc. 738	21.8	21.4	16.2	19.6	19.0	15.8	19.9	17.3	21.4	20.9	17.8	20.1	19.7	19.30
Red Pontiac	19.9	18.4	15.4	15.9	15.5	14.3	14.5	14.1	17.5	17.7	16.5	16.6	16.2	16.35
Russet Burbank	20.5	20.1	15.6	17.0	17.9	16.0	19.2	18.0	21.2	18.4	16.9	19.9	19.9	18.51
AVERAGE	20.3	20.8	15.6	18.0	17.2	14.9	17.3	16.5	18.6	19.3	16.9	18.5	16.8	

North Central Table 6. Scab Reaction Report. Most representative scab (area - type).[1/]

Cultivar	Alberta	Manitoba	Ind.	Kansas	Mich.	Mo.	Minn.	Neb. Late Summer	Neb. Fall	N.Dak.	Ohio	S.Dak.	Wisc.
Early to Med. Early													
ND8914-5Russ	T-1	0-0	1-1	1-1	0-0	0-0	0-0	0-0	2-2	0-0	0-0	T-1	0-0
Neb. 2.67-1	T-1	1-3	1-1	1-1	1-3	0-0	0-0	2-2	2-2	1-1	T-1	1-1	0-0
Neb. 18.66-1	1-1	1-3	1-3	2-2	1-1	1-4	0-0	2-2	1-3	1-2	0-0	1-1	0-0
Minn. 8020	T-1	T-3	1-2	1-1	0-0	1-2	0-0	0-0	1-2	T-1	0-0	1-1	0-0
Norland	T-1	0-0	1-2	1-1	0-0	1-1	0-0	0-0	2-3	T-1	0-0	T-1	0-0
Medium to Late													
Norchip	T-1	0-0	1-1	1-1	0-0	1-2	0-0	0-0	2-3	T-1	T-1	0-0	0-0
AK 24-3	1-1	T-4	1-2	1-1	0-0	1-1	0-0	0-0	1-3	T-1	0-0	2-1	0-0
A68678-1	T-1	0-0	0-0		0-0	T-1	0-0	0-0	0-0	0-0	T-1	T-1	0-0
A6680-5	1-1	0-0	1-1		1-1	0-0	0-0	0-0	1-3	0-0	T-1	0-0	0-0
ND8891-3	T-1	0-0	1-3	1-1	1-3	1-2	0-0	1-2	2-5	1-1	0-0	2-1	0-0
ND8850-2	T-1	0-0	0-0	1-1	0-0	1-2	0-0	0-0	3-3	T-1	0-0	0-0	0-0
Neb. 17.67-1	1-1	0-0	1-2	1-1	0-0	1-1	0-0	1-2	3-2	T-1	T-1	2-1	0-0
La 11-118	T-1	0-0	1-2	1-1	0-0	1-2	0-0	0-0	2-2	3-2	0-0	1-1	0-0
La 01-70	T-1	1-2	3-2	1-2	1-3	1-2	0-0	0-0	2-3	3-2	0-0	2-1	0-0
La 92-157	1-2	0-0	2-1	1-1	1-3	1-2	0-0	0-0	2-2	1-2	0-0	2-1	0-0
Minn. 7926	T-1	0-0	2-2	1-1	1-2	1-2	0-0	2-3	1-3	T-1	0-0	0-0	0-0
Minn. 7973	T-1	0-0	1-2	1-1	0-0	1-2	0-0	0-0	1-3	T-1	T-1	0-0	0-0
Wisc. HS-17	T-1	0-0	1-1	1-1	1-3	2-4	0-0	0-0	1-3	T-2	0-0	2-1	3-5
Wisc. 723	2-1	0-0	1-2	1-1	0-0	1-1	0-0	0-0	3-2	T-2	0-0	1-1	0-0
Wisc. 738	T-1	0-0	2-2	2-1	0-0	1-2	0-0	0-0	2-3	1-2	0-0	T-1	2-2
Red Pontiac	T-1	T-5	2-2	1-1	2-4	2-2	0-0	0-0	3-3	2-2	0-0	T-1	3-4
Russet Burbank	1-1	0-0	0-0	1-1	1-1	T-1	0-0	0-0	0-0	0-0	0-0	0-0	0-0

1/ Area
- T-Less than 1%
- 1-1-20%
- 2-21-40%
- 3-41-60%
- 4-61-80%
- 5-81-100%

Type
1. small, superficial
2. larger, superficial
3. larger, rough pustules
4. larger pustules, shallow holes
5. very large pustules, deep holes

North Central Table 7. Summary of Grade Defects.

Cultivar	External					Internal			
	Scab	Growth Cracks	Second Growth	Sun Green	Total[1/] Free of Ext. Defects	Hollow Heart	Internal Necrosis	Vascular Discolor-ation	Total[1/] Free of Int. Defects
Early to Med. Early									
ND8914-5Russ	11.7	1.5	7.8	2.5	84.9	.4	.4	1.7	97.4
Neb. 2.67-1	19.8	1.9	1.1	2.9	80.3	1.6	.5	6.6	91.1
Neb. 18.66-1	24.1	6.9	5.2	5.4	71.8	.8	.2	5.4	92.5
Minn. 8020	17.5	.9	3.9	1.7	86.4	.1	.6	2.5	96.5
Norland	17.0	2.1	4.0	1.2	87.3	.2	.2	4.1	95.3
Medium to Late									
Norchip	12.6	8.5*	9.8	3.3	79.2	.3	1.7	7.5	90.1
AK 24-3	14.9	3.5	15.5*	4.8	66.7	1.1	1.2	15.7	82.5
A68678-1	9.9	3.9	9.2	2.3	82.3	7.3*	1.0	1.8	89.2
A6680-5	4.3	2.8	11.6	3.3	79.2	8.3*	1.2	3.3	85.5
ND8891-3	14.6	7.3	7.9	5.5	74.8	3.2	1.0	8.1	84.4
ND8850-2	15.2	4.0	10.9	4.5	78.1	.5	.6	7.7	86.8
Neb. 17.67-1	17.2	1.7	8.2	4.1	76.8	.8	.2	7.9	90.8
La 11-118	22.1	2.9	4.1	6.2	74.5	3.4	.7	7.8	88.0
La 01-70	29.8	2.8	5.0	3.8	71.4	1.7	.3	6.6	91.2
La 92-157	20.2	4.0	3.5	3.5	77.6	.2	.2	4.5	95.0
Minn. 7926	18.1	1.5	2.9	3.6	87.9	1.2	3.2	7.2	88.7
Minn. 7973	13.5	1.8	6.2	5.2	83.3	1.0	.5	3.0	95.1
Wisc. HS-17	23.7	.5	2.7	.9	88.4	.4	.3	8.7	90.8
Wisc. 728	22.7	2.1	1.9	4.0	81.2	.6	.3	5.4	93.5
Wisc. 738	17.5	5.4	5.6	5.8	79.2	.9	2.1	4.9	91.2
Red Pontiac	24.7	6.3	10.9	2.1	69.3	2.5	.8	7.2	89.4
Russet Burbank	9.3	5.2	32.3*	2.2	60.5	1.7	.4	6.4	91.9

1/ Percent normal tubers showing no defects (some individual tubers had more than one type of defect). Michigan only reported a 25 tuber sample instead of the usual 100 tuber sample from each replication. (4 replication, 25 tubers).

* Possible weakness of a variety or clone.

North Central Table 8. Chip Quality.

Cultivar	Alberta 1/	Manitabo 2/	Ind.	Kansas	Mich. 1/	Mo.	Minn. 1/	Neb. Late 1/ Summer	Neb. Fall 1/	N.Dak. 2/	Ohio 2/	S.Dak.	Wisc. 1/
Early to Med. Early													
ND8914-5Russ	9.3	46			9.0		6.5	3.0	3.0	28.0	38.4		10.0
Neb. 2.67-1	5.8	71			5.0		12.9	4.0	4.0	37.5	50.8		5.8
Neb. 18.66-1	9.0	57			8.0		8.9	5.0	4.0	28.0	44.5		9.0
Minn. 8020	7.1	68			4.0		10.0	4.0	4.0	47.5	55.7		8.0
Norland	7.6	69			6.0		13.9	7.0	4.0	42.0	52.1		7.0
Medium to Late													
Norchip	4.0	70			2.0		16.1	5.0	3.0	47.5	51.7		3.7
AK 24-3	7.0	68					11.2	4.0	3.0	37.0	49.4		7.0
A68678-1	6.8	65			4.0		13.8	4.0	4.0	34.0	52.0		3.9
A6680-5	6.2	66			4.0		13.0	7.0	4.0	35.0	51.4		4.8
ND8891-3	6.8	66			2.0		16.5	4.0	3.0	37.0	44.5		6.3
ND8850-2	4.0	71			2.0		18.8	7.0	5.0	51.0	55.9		5.3
Neb. 17.67-1	9.2	62			5.0		12.9	4.0	3.0	30.5	58.7		5.0
La 11-118	6.1	69			4.0		12.9	6.0	3.0	41.0	45.5		4.5
La 01-70	8.2	66			3.0		12.0	4.0	3.0	46.0	54.9		4.6
La 92-157	7.0	67			5.0		11.2	4.0	3.0	30.0	55.0		6.0
Minn. 7926	8.5	67			3.0		8.2	4.0	3.0	38.0	53.7		6.3
Minn. 7973	4.6	71			2.0		8.0	3.0	3.0	38.0	50.8		6.2
Wisc. HS-17	7.5	66			6.0			4.0	3.0	44.0	51.7		5.0
Wisc. 723	4.5	70			2.0		14.9	3.0	3.0	44.5	57.6		4.4
Wisc. 738	7.0	60					15.2	5.0	3.0	40.5	55.5		5.6
Red Pontiac	8.1	51			5.0		9.9	3.0	4.0	21.0	45.1		9.0
Russet Burbank	6.5	63			3.0		18.5	5.5	5.0	36.0	45.0		5.2
AVERAGE	6.9	65			4.2		12.6	4.5	3.5	37.9	50.9		6.0

1/ PCII Color Chart - low numbers indicate light chips
2/ Agtron - high numbers indicate light chips

North Central Table 9. Merit Ratings[1/]

Cultivar	Alberta	Manitoba	Ind.	Kansas	Mich.	Mo.	Minn.	Neb. Late Summer	Neb. Fall	N.Dak.	Ohio	S.Dak.	Wisc.	Total Points
Early to Med. Early														
ND8914-5Russ			2									1		3
Neb. 2.67-1	1		4			3					1			9
Neb. 18.66-1				4			2	5						11
Minn. 8020														0
Norland										1				1
Med. to Late														
Norchip	3	2	3	2		4		3		2		4		23
AK 24-3														0
A68678-1	2	5				5	4	2	3			2	2	25
A6680-5												5		5
ND8891-3					5		3			4	2			14
ND8850-2			1											1
Neb. 17.67-1						2			2					4
La 11-118							1							1
La 01-70		4			3				1					8
La 92-157				1	1						3			5
Minn. 7926										3			4	7
Minn. 7973	5	3		5	4			1		5				23
Wisc. HS-17	4										4		5	13
Wisc. 723			5		2				5				1	13
Wisc. 738		1		3		1	5		4		5		3	22
Red Pontiac								4				3		7
Russet Burbank														0

1/ Merit Ratings

Rating	Points
1	5
2	4
3	3
4	2
5	1

WISCONSIN

L. E. Towill and R. E. Hanneman, Jr.

Genetics, Cytogenetics and Physiology of the Tuber-bearing Solanum Species
(Cooperative USDA/ARS and Wisconsin Experiment Station)

Endosperm Balance Factors in some Solanum species. One of the factors which influences the success or failure of interspecific crosses in *Solanum* is the viability of the endosperm. A 2:1 ratio of female to male genomes in the endosperm seems necessary; however, there are exceptions to this balance ratio. One proposal to explain the rule and the exceptions is that each twenty-four chromosome pairing group can have either two or zero endosperm balance factors (EBF). A fourty-eight chromosome pairing group can have either four or zero endosperm balance factors (EBF). By this scheme *S. acaule*, which is tetraploid but has homeologous pairing, could have either zero, two or four EBF. *S. tuberosum* Gp. Andigena, which forms quadrivalents, would have zero or four EBF.

In order to test this proposal and to look for a species with zero EBF, thirteen species and three colchicine - doubled clones were intercrossed. Almost all combinations of nine species were crossed. These represented 2x, 4x and 6x plants. Except for *S. acaule* ssp. *albicans*, at least two PIs were used for each species.

The three 6x species tested (*S. demissum*, *S. oplocense* and *S. acaule* ssp. *albicans*) and the synthetic 6x [2082=c-treated (Gp. Stenotomum x *S. stoloniferum*)] behaved as if they possess four EBF's. Tetraploid *S. tuberosum* Gp. Andigena and 4x c-treated *S. chacoense* have four EBFs. However, 4x *S. stoloniferum* and *S. acaule* have only two EBF. Diploid *S. chacoense*, *S. megistacrolobum* and several other diploids have two EBFs.

All successful intercrosses were consistent with the EBF proposal with one exception. *S. verrucosum* crossed successfully with diploid *S. chacoense* and the disomic tetraploids. However, it also had near normal seed set (40 s/f) when crossed with c-treated 4x *S. cardiophyllum*. Possibly *S. verrucosum* or *S. cardiophyllum* has zero EBF.

Potential of Solanum tuberosum Group Andigena Haploids in Breeding. Seeds from different Gp. Andigena clones x Gp. Phureja clone 1.22 crosses were planted in the greenhouse and screened for haploids. Two hundred haploids were obtained and increased through stem cuttings. They were planted in both the field and screenhouse. Gp. Tuberosum haploids, Gp. Stenotomum and Gp. Phureja clones were crossed with Gp. Andigena haploids in both directions using bulk pollen. A total of 14,530 pollinations were made. The average seeds/fruit obtained when using Gp. Andigena haploid bulk pollen on all groups including Gp. Andigena is rather high (43 s/f) compared with Gp. Tuberosum haploids as the male (7 s/f). Despite the high average seeds/fruit (25 s/f) obtained when crossing Gp. Andigena haploids x Gp. Andigena haploid bulk pollen, the percentage of fruit set per pollination is low (8%). This is comparable with that of using Gp. Tuberosum haploid bulk pollen on both Gp. Tuberosum (10%) and Gp. Andigena (3%) haploids. But, Gp. Andigena haploid bulk pollen used on other groups shows higher average fruit set/pollination

(twice or more). This might suggest the presence of some factors preventing seed formation in Gp. Andigena haploid x Gp. Andigena haploid crosses. It may well be due to "S" alleles.

Reciprocal Differences Between Hybrid Populations in S. tuberosum. We have initiated an experiment to determine if early vs. late hybridization will be more effective for incorporating new germplasm into Gp. Tuberosum. In this endeavor, we have encountered surprising reciprocal differences between two parallel hybrid populations.

A pair of reciprocal hybrid populations were established, making every effort to treat them similarly, using the same parent populations and establishing equally high levels of genetic diversity in both. The only real difference was the direction of the cross. For one population the female parent population was Gp. Tuberosum haploids; for the other female parent population was Gp. Phureja. These two populations were screened in the greenhouse using Ewing's leaf cutting technique. Striking differences appeared for percent tuberization, with similar differences for pot yield. Yield trials were made at Sturgeon Bay and Hancock. Yield differences were highly significant, and the population in Gp. Tuberosum cytoplasm roughly doubled the yield of the population in Gp. Phureja cytoplasm.

The reciprocal differences may be cytoplasmically determined, with cytoplasm affecting photoperiod response. The differences could also be due to gamete sampling differences or even gametophytic selection. Experiments are underway to determine the nature of these differences.

Studies of Bulk Populations of Species and Species-Haploid Hybrids. Bulk populations of Solanum chacoense, S. microdontum, S. sparsipilum, Gp. Stenotomum and hybrids with Gp. Tuberosum haploids were created several years ago and have gone through four to five generations of sib-mating. Two parallel lines from each population were developed--one population under went selection for tuberization and the other did not.

In this study, a sample of each generation (one thru four) that under went selection for tuberization was replicated twice at each of two locations and in the greenhouse. Only the first and fifth generation of the sib-mated unselected line were included in the trial.

With the species bulks, none had undergone selection for tuberization with the exception of Gp. Stenotomum. The unselected populations showed essentially no change in yield or tuberization between the first and fifth generation. The Gp. Stenotomum bulk population which was unselected for tuberization indicated no change in yield or tuberization between the first and the fifth generation; however, the population subjected to selection for tuberization increased its yield four to ten fold with the first cycle of selection for tuberization and the percent tuberization rose 30 to 50 percent. In the two subsequent generations, no significant changes in percent tuberization occurred and only modest changes in yield were noted.

In all of the species-haploid hybrid combinations, in general, there was either no change or a decrease in tuberization and yield in the unselected group between the first and fifth generation and modest to steady improvement for both where selection for tuberization was conducted. In general, there was not the dramatic effect shown with the first cycle of selection for tuberization as in the Gp. Stenotomum bulk population.

The positive contribution of Gp. Tuberosum haploids on tuberization and yield is demonstrated by comparing the initial bulk populations of the species with the initial species-haploid hybrid populations derived from them. The difference is substantial--sometimes as much as from two to 85 percent for tuberization and from zero to 0.4 pounds per plant.

In general, the correlation between greenhouse and field data was weak though sometimes indicative of a similar trend. It was most misleading for estimating percent tuberization for the wild species in the field.

Qualitative traits such as flower color, stem pigmentation, tuber color, tuber shape, etc. were followed through the various genenerations to attempt to detect possible genetic shifts in the populations.

Possible Bridge Species for Series Etuberosum. Species of the non-tuber-bearing Etuberosum Series in Solanum are not known to cross with the tuber-bearing species. The species in the Etuberosum Series possess excellent frost and virus resistance. Immunity to leaf roll virus has been reported among them. It would be desirable to find a way to bring that germplasm into the tuber-bearing Solanums.

In an effort to find a bridge species, 33 different species were crossed with S. brevidens, S. etuberosum and S. fernandezianum. Fruit formation occurred with S. boliviense, S. commersonii, S. microdontum, S. spegazzinii, S. stoloniferum, S. tarijense, S. venturii, S. vernei and S. verrusocum with the best fruit development occurring on S. commersonii, S. spegazinii and S. verrucosum. A limited number of fruit have been extracted. Seed development is poor and would appear to need the help of embryo culture to obtain plants from these crosses.

Meristem Culture and Germplasm Preservation Procedures. Methods for meristem culture in a variety of tuber-bearing Solanum species were devised for use in germplasm preservation and in virus-elimination studies. The culture medium of Stace-Smith and Mellor (devised for varieties of Gp. Tuberosum) gave regeneration from meristems in most of the 58 foreign varieties used. Meristemming in combination with heat treatment produced a large number of PVX and PVS free regenerants. Studies with media containing different concentrations and types of growth regulators are still in progress. Cytokinin concentrations of approximately 1 mg/l and auxin concentrations of less than 0.01 mg/l allowed for regeneration in many Solanum species. Transfers of explants to GA allowed normal shoot-root differentiation in several other cases. Small nodal sections (leaf and stem with axillary bud) from meristem-derived plantlets (often thin, weak and chlorotic) produced more normal plantlets which could then be transplanted to soil. Stem sections most often produced sufficient roots for transplanting; where this was not true, transfer of stem sections to 0.1 mg/l IBA aided root formation.

Germplasm preservation studies are beginning utilizing S. etuberosum as a model system because of the large percentage of meristems that develop into plantlets. Low temperature preservation studies using low cooling rates gave some survival to -40 to-50°C. Refrigerator storage procedures are also being developed for use with meristem, bud, and nodal sections of several species.

ALABAMA

J. L. Turner and Harrison Bryce - Main Station
J. E. Barrett, R. N. McDaniel, Frank B. Selman and
Frank E. Garrett (Retired) - Gulf Coast Substation
Marlin H. Hollingsworth - North Alabama Horticulture Substation
John Eason and Marvin E. Ruf - Sand Mountain Substation

Irish Potato Variety Trials, Gulf Coast Substation, Fairhope and Sand Mountain Substation, Crossville, Alabama

Experimental Procedure. Seed potatoes were obtained from Frito-Lay Company, Baldwin County, Alabama, Michigan, Minnesota, North Dakota, South Dakota, Starks Farms, USDA and the University of Wisconsin for the 1977 trials. Fourteen named varieties and 26 numbered selections were grown this year for yield data and specific gravity. Each entry was replicated four times in a randomized block design. Plots were 30 feet by 38 inches at Fairhope and 20 feet by 42 inches at Crossville. Seedpieces were cut to approximately one and one-half ounces each and dipped for one minute in a solution containing eight ounces of Mertect 340-F to 7-½ gallons of water, dried, calloused and presprouted at 55° F for approximately two weeks and planted February 23 at Fairhope and March 10 at Crossville. Seedpieces were planted at Fairhope with a hand operated planter and at Crossville by hand. Seedpieces were spaced 12 inches in the drill. Plots were harvested June 1 at Fairhope and June 29 at Crossville.

Results. At Fairhope, Red La Soda, from three sources, was the highest yielding variety. Yield and size for each source were very similar. Frito-Lay - 795 was the highest yielding white variety with Wisconsin 738, Sebago, FL-162 and Wisconsin 726 also producing good yields of size A potatoes. Atlantic from the USDA was better yielding than Atlantic from Starks Farms. The USDA source also produced a higher specific gravity. Norchip from the USDA produced the same specific gravity as Atlantic from Starks. Atlantic continues to be the highest solids potato in the trials. Yields of size A potatoes were very good for all entries. Seed sprouting and persistence were good.

At Crossville, weather conditions during May and June were extreme for drought and high temperatures. Day temperatures above 100° F were recorded on several occasions. Prolonged periods of above 90° F weather was common for June. Yields were only fair to good. Red La Soda, from three sources, was the highest yielding variety. The ability of Red La Soda to withstand adverse climatic conditions is apparent. Frito-Lay - 723 was the highest yielding white variety. Yields from Atlantic were below those of last year. Atlantic from Starks Farms was considerably below what this variety has been producing. Specific gravity for Atlantic, however, still remains the highest for all entries. Wisconsin 774-R has an attractive red skin and a long tuber, but its yield does not compare favorably with Red La Soda. Wischip had a very weak plant that appeared to have no heat tolerance.

Alabama Table 1. Potato Variety Trial, Fairhope, 1977[1/]

Variety	Source	Marketable Yield/Acre Total	Size A[2/]	Size B	Size A of total	Specific gravity	Stand at harvest
		Cwt.	Cwt.	Cwt.	%		%
Red La Soda	Clemenson, N. D.	278	274	4	99	1.072	100
Red La Soda	Starks	274	272	2	99	.073	99
Red La Soda	Donnelley, N. D.	272	268	4	98	.072	100
FL-795	Frito-Lay	267	263	4	99	.082	99
Wisconsin 738	U. Wisconsin	255	253	2	99	.078	99
Sebago	Casmes Rolus, Mi.	242	232	10	96	.072	99
FL-162	Frito-Lay	237	233	4	98	.077	100
Wisconsin 726	U. Wisconsin	236	234	2	99	.079	100
Wisconsin 774-R	U. Wisconsin	227	225	2	99	.067	99
B6987-29	USDA	223	221	2	99	.076	98
Norchip	USDA	222	214	8	96	.081	100
La Rouge	Miller & Farbo, N. D.	212	206	6	97	.073	100
Atlantic	USDA	211	209	2	99	.084	100
Norchip	Starks	208	204	4	98	.083	94
Wisconsin 718	U. Wisconsin	205	202	3	99	.074	99
FL-657	Frito-Lay	205	202	3	99	.073	99
Atlantic	Starks	204	198	6	97	.081	96
La Chipper	Starks	203	198	5	98	.075	100
Norchip	Schneider, N. D.	202	193	9	96	.082	100
La Chipper	USDA	201	200	1	99	.075	94
La Chipper	USDA	199	194	5	97	.075	98
FL-750	Frito-Lay	199	191	8	96	.076	100
Wisconsin 723	U. Wisconsin	199	195	4	98	.080	100
Wisconsin 623	U. Wisconsin	192	187	5	97	.079	99
B7768-4	USDA	189	189	0	100	.077	95
B7767-2	USDA	183	179	4	98	.073	99
Wisconsin 731	U. Wisconsin	181	177	4	98	.066	94
B7802-2	USDA	175	174	1	99	.077	97
B7618-6	USDA	173	173	0	100	.072	98
B7595-3	USDA	161	158	3	98	.072	99

Alabama Table 1. Continued

Variety	Source	Marketable Yield/Acre Total	Size A 2/	Size B	Size A of total	Specific gravity	Stand at harvest
		Cwt.	Cwt.	Cwt.	%		%
Superior	Starks	156	153	3	98	.077	98
FL-723	Frito-Lay	153	152	1	99	.072	99
Wisconsin 715	U. Wisconsin	153	150	3	98	.074	85
Superior	Bogestad, Mn.	150	148	2	99	.077	96
Wischip	U. Wisconsin	149	142	7	95	.075	98
Superior	USDA	148	146	2	99	.077	94
B8101-3	USDA	141	139	2	99	.077	89
B7603-1	USDA	131	127	4	97	.070	99
B7631-8	USDA	100	97	3	97	.080	91

1/ Soil test p = 130(H); K = 89(m); mg = 250(H); pH = 5.6
2/ Size A = potatoes with 1 7/8 inches diameter and larger
Size B = potatoes with 1½ - 1 7/8 inches diameter

Alabama Table 2. Potato Variety Trial, Crossville, 1977[1/]

Variety	Source	Marketable Yield/Acre Total	Size A[2/]	Size B	Size A of total	Specific gravity	Stand at harvest
		Cwt.	Cwt.	Cwt.	%		%
Red La Soda	Starks	180	164	16	91	1.071	95
Red La Soda	Clemenson, N. D.	169	156	13	92	.071	95
Red La Soda	Donnelley, N. D.	158	145	13	92	.074	100
FL-723	Frito-Lay	150	145	13	92	.072	95
Atlantic	USDA	139	121	18	87	.090	100
B6987-29	USDA	137	128	9	93	.077	95
Wisconsin 738	U. Wisconsin	137	121	16	88	.080	85
FL-162	Frito-Lay	133	117	16	88	.081	95
Kennebec	USDA	128	115	13	90	.075	95
La Rouge	Miller & Farbo, N. D.	128	110	18	86	.074	90
B7802-2	USDA	128	124	4	97	.078	100
B7768-4	USDA	121	111	10	92	.083	85
Norchip	Starks	118	99	19	84	.084	100
Wisconsin 726	U. Wisconsin	118	105	13	89	.078	95
Wisconsin 715	U. Wisconsin	118	103	15	87	.075	95
Wisconsin 774-R	U. Wisconsin	117	93	24	79	.065	95
Norchip	USDA	115	93	22	81	.084	100
Wisconsin 723	U. Wisconsin	114	99	15	87	.082	95
B7603-1	USDA	114	90	24	79	.074	100
Atlantic	Starks	114	107	7	94	.090	80
FL-795	Frito-Lay	113	101	12	89	.081	75
B7618-6	USDA	112	103	9	92	.073	95
La Chipper	Burbidge, N. D.	109	96	13	88	.079	95
La Chipper	USDA	108	93	15	86	.078	95
Norchip	Schneider, N. D.	107	86	21	80	.085	100
Sebago	Casmer Rolus, Mi.	103	84	19	82	.066	90
Wisconsin 623	U. Wisconsin	103	79	24	77	.079	90
Wisconsin 718	U. Wisconsin	102	92	10	90	.072	90
Superior	Starks	99	86	13	96	.078	100
Wisconsin 731	U. Wisconsin	96	86	10	86	.068	90

Alabama Table 2. Continued

Variety	Source	Marketable Yield/Acre			Size A of total	Specific gravity	Stand at harvest
		Total	Size A 2/	Size B			
		Cwt.	Cwt.	Cwt.	%		%
Superior	USDA	95	89	6	94	.080	100
B8101-3	USDA	95	85	10	89	.083	95
Superior	Bogestad, Mn.	94	84	10	89	.078	100
FL-750	Frito-Lay	91	67	24	74	.077	90
La Chipper	Starks	90	72	18	80	.079	90
B7595-3	USDA	89	72	17	81	.078	95
B7767-2	USDA	83	67	16	81	.075	80
FL-657	Frito-Lay	80	76	4	93	.071	60
B7631-8	USDA	74	59	15	80	.083	95
Wischip	U. Wisconsin	68	44	24	65	.079	100

1/ Soil test p = 145(VH); K = 128(H); mg = 77(H); pH = 5.6
2/ Size A = potatoes with 1 7/8 inches diameter and larger
Size B = potatoes with 1½ - 1 7/8 inches diameter

Alabama Table 3. Characteristics of Potato Varieties, 1977.

Variety	Source	Eye[1/] depth	Eye[2/] size	Skin[3/] color	Shape	Eye[4/] appeal	Harvest[5/] season
Red La Soda	Starks	D	L	Red	Round	4.5	M
Red La Soda	Clemenson, N. D.	D	L	Red	Round	4.5	M
Red La Soda	Donnelley, N. D.	D	L	Red	Round	4.5	M
FL-723	Frito-Lay	S	S	Clear	Round	3.0	E
Atlantic	USDA	M	M	Wh-SR	Round	4.5	M-L
B6987-29	USDA	S	S	Wh	Round	4.5	L
Wisconsin 739	U. Wisconsin	S	S	Wh-SR	R-Flat	3.5	L
FL-162	Frito-Lay	S	S	Wh	Round	4.5	M-L
Kennebec	USDA	S	S	Wh	R-Long	4.0	L
La Rouge	Miller & Farbo, N. D.	D	L	Red	Round	4.0	M
B7802-2	USDA	S	M	Wh	R-Flat	3.0	M
B7768-4	USDA	S	S	Wh-SR	Round	4.0	M
Norchip	Starks	M	S	Wh	Round	4.0	L
Wisconsin 726	U. Wisconsin	S	S	Wh	Round	4.5	L
Wisconsin 715	U. Wisconsin	S	S	Wh	Round	3.5	M-L
Wisconsin 774-R	U. Wisconsin	D	L	Red	Long	3.5	L
Norchip	USDA	M	S	Wh	Round	4.0	L
Wisconsin 723	U. Wisconsin	M	M	Wh	R-Long	3.0	M
B7603-1	USDA	S	S	Pink	R-Long	3.0	M
Atlantic	Starks	M	M	Wh-SR	Round	4.5	M-L
FL-795	Frito-Lay	S	S	Wh	R-Flat	4.0	L
B7618-6	USDA	S	S	Wh	R-Flat	3.0	E
La Chipper	Burbidge, N. D.	S	S	Wh	R-Flat	3.5	M
La Chipper	USDA	M	M	Wh	R-Flat	3.5	M
Norchip	Schneider, N. D.	M	S	WH	Round	4.0	L
Sebago	Casmer Rolus, Mi.	S	S	Wh	R-Flat	4.0	L
Wisconsin 623	U. Wisconsin	S	S	Wh-SR	Round	4.0	M
Wisconsin 718	U. Wisconsin	S	S	Wh-SR	Round	3.0	E
Superior	Starks	M	M	Wh-SR	Round	4.0	E
Wisconsin 731	U. Wisconsin	S	L	Wh-SR	Round	3.0	M

Alabama Table 3. Continued.

Variety	Source	Eye 1/ depth	Eye 2/ size	Skin 3/ color	Shape	Eye 4/ appeal	Harvest 5/ season
Superior	USDA	M	M	Wh-SR	Round	4.0	E
B8101-3	USDA	S	M	Wh-SR	R-Long	3.0	L
Superior	Bogestad, Mn.	M	M	Wh-SR	Round	4.5	E
FL-750	Frito-Lay	S	S	Wh	Round	3.5	M
La Chipper	Starks	S	S	Wh	Round	3.0	M
B7595-3	USDA	S	S	Pink	Round	3.0	M
B7767-2	USDA	S	S	Wh-SR	R-Long	3.0	M
FL-657	Frito-Lay	S	S	Wh	Round	3.5	M
B7631-8	USDA	M	M	Wh	R-Long	3.0	L
Wischip	U. Wisconsin	S	S	Wh	Round	4.0	E

1/ S = Shallow; M - Medium; D = Deep.
2/ S = Small; M = Medium; L = Large.
3/ Wh = White; SR = Some russett.
4/ 5 = Excellent; 4 = Good; 3 = Fair; 2 = Poor; 1 = Very poor.
5/ E = 90; M = 95; L = 100 days from planting to harvest.

ALASKA

Curtis H. Dearborn
Research Horticulturist

Early season growing conditions were good for potatoes in 1977. Soil moisture carry-over was better than usual. Precipitation was light and irrigation necessary by June 29. The major efforts were: evaluation for early high yielding clones of both "whites" and "russets", high yielding and high quality "lates" of both "whites" and "russets" including several "reds", resistance to field frosting of new selections and scab resistance in the field of selected clones from scab resistant parental lines.

Thirty six clones and four named cultivars for early checks were planted May 11 and harvested August 16. Kennebec yielded at the rate of 394 cwt/A with 300 cwt grading U.S. No. 1, 2 to 3.5" diameter. Thirteen exceeded Kennebec in cwt marketable, the highest, AK 10-71-1-74 yielding 454 cwt/A with 384 cwt/A marketable. Clone ND 8891-3 placed seventh with 410 and 325 cwt/A. Penn 71 was twentieth at 366 and 288 cwt/A. Clone W-718 was twenty fourth with 334 and 268 cwt/A. Clone M-3866 was twenty ninth with 329 and 261 cwt/A. Specific gravities ranged from 1.072 to 1.096. Kennebec was 1.078.

Fourteen russets handled the same as the early "whites" averaged lower yields and higher specific gravities which is attributed in part to a poorer location. Raritan a partially russeted, buff potato produced at the rate of 312 cwt total and 284 cwt marketable with specific gravity (sp. gr.) of 1.106. Nooksack had 165 total, 146 cwt of No. 1/A with sp. gr. of 1.099. Clone B8926-8 AK had 265 total 248 cwt of No. 1 and sp. gr. 1.096. Clone B8857-6 AK had 234 total, 205 cwt No. 1 and sp. gr. 1.105. Clone B8926-8 was rated as the best early russet.

A well replicated trial of 42 potato clones made up of four "reds", six named "whites" and 30 numbered selections was harvested after a 120 day growing season. Alaska Red was the highest yielder with 344 cwt of No. 1 grade tubers per acre at 1.094 sp. gr. Minnesota, M-3866 ranked twelfth with 284 cwt at 1.096 sp. gr. Wisconsin, W-729 was thirty fifth at 200 cwt and 1.091 sp. gr. and Bison was last with 119 cwt and 1.095 sp. gr. Snowchip lead the "whites" at 325 cwt at 1.102 sp. gr. Four Alaskan selections from the B8800 series yielded between 312 and 318 cwt No. 1 grade per acre with sp. gr. ranging from 1.097 to 1.103. For comparison, Kennebec was 269 cwt at 1.102 sp. gr. and Atlantic 201 cwt at 1.104 sp. gr. Clone AK 14-70-1-72, a scab resistant selection yielded at 235 cwt with 1.106 sp. gr. Although not as productive as Ontario it may replace it as AK 14-70-1-72 is much better quality and breaks dormancy later than Ontario. Clone AK 38-68-2-70, a selection from Monona x AK 1-62-90-64 has consistently produced good chips prior to cold storage and following conditioning for two to three weeks. It yielded at 279 cwt with 1.105 sp. gr.

In a "late harvest" replicated trial of 30 russet-skinned clones, B8966-15 AK was the highest yielder. It produced a total of 371 cwt, 328 cwt No. 1 with

1.092 sp. gr. Clone B8934-2 AK was second with 371 cwt, 306 cwt No. 1 with 1.098 sp. gr. Russet Burbank was eighth at 377 cwt, 274 cwt No. 1 with 1.102 sp. gr. Nebraska 42-1 yielded 370 cwt, 266 cwt No. 1 at 1.089 sp. gr. and Centennial had 261 cwt No. 1 at 1.092 sp. gr., both of which are low dry matter types in this region. Clone AK 6-68-5-72 entered in the 1978 North Central States Regional Potato Trials as AK 6-5 yielded 289 cwt total, 240 cwt No. 1 with 1.102 sp. gr.

In a planting of seedling from 16 crosses involving frost resistant parents 85 selections were retained. One clone of purple flesh and skin color produced very attractive blue-purple chips of good quality.

CALIFORNIA - 1977

R. E. VOSS, D. E. HALSETH, & KEN FOSTER

In 1977, first year seedlings were grown and selected at two locations, 5 and 12 hill observational plots were grown at four locations, replicated yield trials were grown at ten locations, and one location (Stockton Delta) was used for seed increase.

Approximately 20,000 second and third size tubers of first year greenhouse grown seedlings were obtained from Idaho (J. Pavek) and North Dakota (R. Johansen), 10,000 from each program. These represented 81 families from Idaho and 52 families from North Dakota. The tubers from each family were randomly divided in half; one-half were planted in Kern County at the USDA Cotton Research Station in February and one-half were planted in the Butte Valley of Siskiyou County near the Oregon border. Of the 81 Idaho families, 212 selections from 67 families were made at one or both locations; 160 of these selections (75 percent) were from 38 families that had at least one selection at both sites, 20 selections (9 percent) were from 12 families that had selections made only at Shafter, and 32 (15 percent) were from 17 families that had selections made only at Butte Valley. Of the 52 North Dakota families, 214 selections from 49 families were made at one or both locations; 180 of these selections (84 percent) were from 28 families that had at least one selection at both sites, 24 selections (11 percent) were from 13 families that had selections made only at Shafter, and 10 selections (5 percent) were from 8 families that had selections made only at Butte Valley. A total of 219 selections were made at Shafter and 207 at Butte Valley, from a total of 116 families. This is a 2.1 percent selection rate on seedlings and an 87 percent selection rate on families.

Of the 200 seedlings selected at Shafter in 1976, 27 were selected in 1977 for further evaluation. Of the 335 that had been selected in Butte Valley in 1976, 21 were selected for further evaluation. A total of 37 families are represented, 21 at Shafter and 18 at Butte Valley, only 2 families are represented at both locations.

The first seedlings of this program were grown in California in the Stockton Delta in 1975. Of the 30,000 grown, 430 were selected and grown at Shafter and Butte Valley. Of these, 40 were selected in 1976 for further testing in Kern County and 43 in Northern California, only 5 at both locations. Of those, 30 have been selected for evaluation in 1978, 24 at Shafter and 7 at Tulelake. Only 1, NDD 143-1 a russet, was selected in 1977 at both locations.

Observational clones, in addition to the California selection seedlings, were also grown in 5 and 12 hill plots. They were obtained from Washington, North Dakota, and Idaho. Represented in the replicated yield trials were 27 russets (6 named varieties), 13 white chipping varieties (3 named), 7 reds (3 named) and White Rose.

The new varieties and advanced selections that performed well in 1977 were Centennial, Atlantic, A68678-1, A66122-3, BC8370-4, WC316-1, A70365-21, Nooksack, B6987-29, and ND8891-3. Centennial still is recommended for Kern County but does occasionally perform well in the light sands of Butte Valley and other locations. Its susceptibility to speckle leaf, hollow heart, verticillium wilt, metribuzin herbicide and coarse skin still prevails in other areas. Severe heat necrosis symptoms occurred in Kern County in 1977, when harvesting was not done before July 1 and several days of 105-110° F temperatures occurred. A68678-1 was the most consistent performer of the "new russets." Yield and quality were excellent in all but one location. Nooksack has become a consistent performer as special seed handling procedures become more widely used. Some hollow heart was found in both BC8370-4 and WC316-1. Low tuber set number also was a problem with WC316-1, which otherwise was the most attractive of all russets. A66122-3 and A70365-21 were the two top yielding varieties at both Shafter and Tulelake. A66122-3 has a tendency for some knobs, but less so than Russet Burbank, and the yield potential appears to be considerably more. A70365-21 has a very light russeting, a serious fresh market defect, but needs to be further evaluated for processing potential.

Atlantic continues to perform well, with some hollow heart. Line B6987-29, sibling to Atlantic, also continues to perform well; it outyielded Atlantic in 2 of 3 locations in 1977. Line ND8891-3 was again a big yielder but specific gravity is lower than Kennebec and chipping color no better than Kennebec; thus its future is questionable. A503-42 and WN352-1 are being dropped from the program. Other advanced seedlings or new varieties being dropped are Bison, WC285-18, WC285-141, and WN330-1.

Tables 1 and 2 list the yield, grade and other miscellaneous from the replicated yield trials at Shafter and Tulelake. Table 3 lists the observational clones that were selected for further evaluation in 1978. A complete report on all variety trials is published by the UCD Vegetable Crops Department and is available upon request.

CALIFORNIA TABLE 1. YIELD AND QUALITY MEASUREMENTS AT SHAFTER, 1977

Variety	Seed Source	Yield, cwt/A Total	No. 1's >12 oz	No. 1's 4-12 oz	<4 oz	2's & Culls	% No. 1's	Spec. Grav. 1.0--	Vine Rating 1/	Tuber Rating 2/	Sugar Rating 3/	Maturity
PART A. RUSSETS												
A70365-21	Ida	595	185	350	20	40	90	75	4.0	3.0	0.3	EM
A66122-3	Ida	490	100	350	20	20	92	81	4.2	3.6	0.4	M
WC435-3	Delta	490	40	375	25	50	85	78	4.5	3.0	0.5	M
NDA8451-3	Ida	475	40	415	20	0	96	71	3.5	3.0	0.5	EM
NDA8694-3	Ida	470	55	400	15	0	97	72	2.9	3.0	0.6	EM
Nor. Russet 10	Neb	455	25	385	30	15	90	77	3.5	3.3	1.5	E
Nor. Russet	Delta	445	30	395	15	5	96	73	3.5	3.8	0.8	E
Rus. Burbank	Delta	445	10	320	20	95	74	87	4.2	2.0	0.3	L
Centennial	Colo	440	15	385	20	20	91	82	4.4	3.9	1.0	M
WC285-18	Colo	425	15	355	40	15	87	79	4.4	3.0	0.3	M
Nooksack	BV	420	45	365	10	0	98	90	3.9	3.5	0.2	ML
WC415-12	Delta	420	60	290	25	45	83	81	3.8	2.5	0.3	M
Centennial	Delta	420	10	355	45	10	87	81	4.2	4.0	0.6	M
A70383-26	Ida	410	75	280	20	35	87	82	3.4	3.2	0.2	EM
A68678-1	Delta	405	35	335	25	10	91	86	4.0	4.0	0.2	EM
BC8370-4	Delta	400	10	340	40	10	88	82	3.8	4.0	0.4	M
WC415-14	Delta	400	40	270	30	60	78	78	4.0	3.1	0.6	M
Nor. Russet M	Neb	390	40	340	10	0	97	79	3.5	3.8	0.7	E
A70365-17	Ida	390	30	320	35	5	90	81	2.8	3.0	0.5	M
WN330-1	Ida	335	10	290	30	5	90	79	3.2	3.7	0.2	L
WC285-141	Delta	330	15	260	35	20	83	85	4.2	4.0	0.2	M
WC316-1	Delta	320	60	235	20	5	92	77	3.5	4.4	0.5	M
WC415-1	Delta	315	5	130	40	140	43	86	3.1	1.0	1.0	M
ND9642-3	ND	270	5	205	55	5	78	80	2.7	3.0	0.5	E
A70382-9	Ida	265	0	220	45	0	83	75	2.7	3.3	0.5	E
WC373-6	Delta	145	0	100	40	5	69	67	2.9	2.0	0.5	M

CALIFORNIA TABLE 1. YIELD AND QUALITY MEASUREMENTS AT SHAFTER, 1977

Variety	Seed Source	Yield, cwt/A Total	No. 1's >12 oz	No. 1's 4-12 oz	<4 oz	2's & Culls	% No. 1's	Spec. Grav. 1.0--	Vine Rating 1/	Tuber Rating 2/	Sugar Rating 3/	Maturity
					PART B. WHITES							
ND8891-3	Delta	690	175	450	10	55	91	76	4.0	3.7	0.7	EM
White Rose	Colo	585	70	435	15	65	86	78	4.0	2.3	1.0	EM
Kennebec	Delta	550	115	405	15	15	95	84	4.5	4.0	0.4	EM
Superior	Neb	540	135	355	10	40	91	79	4.3	3.0	0.3	E
A503-42	Delta	535	70	400	10	55	88	85	4.2	2.7	0.5	M
B6987-29	Maine	510	95	385	15	15	94	89	3.7	3.8	0.0	M
A70369-2	Ida	500	20	425	45	10	89	91	4.5	4.0	0.4	M
Atlantic	Delta	470	30	405	30	5	93	93	4.2	4.1	0.2	M
B7151-4	Delta	420	25	360	15	20	92	91	4.2	2.0	0.7	EM
WN352-1	Delta	415	105	265	15	30	89	86	3.8	3.5	0.5	M
ND9124-4	ND	390	25	330	25	10	91	76	3.4	3.3	0.3	EM
ND9620-1	ND	375	5	295	75	0	80	72	2.2	3.2	0.5	E
ND9333-2	ND	335	0	245	70	20	73	79	2.2	3.5	0.6	E
ND9476-4	ND	275	0	210	50	15	76	85	2.9	2.7	0.2	EM
					PART C. REDS							
Red La Soda	Delta	585	75	495	10	5	97	77	4.5	3.0	0.6	EM
Chieftain	Delta	550	70	465	10	5	97	72	3.9	4.1	0.1	M
ND7715-7R	Neb	535	135	375	10	15	95	72	3.0	4.2	0.5	EM
ND9403-16R	ND	515	60	415	30	10	92	75	2.8	3.7	0.4	E
Bison	Delta	355	30	300	20	5	93	69	2.7	4.1	0.3	E
ND9403-19R	ND	245	10	195	30	10	84	84	2.4	3.5	0.5	E

1/ Vine Ratings: 5 = Excellent, 4 = Very Good, 3 = Good, 2 = Fair, 1 = Poor

2/ Tuber Ratings: 5 = Excellent, 4 = Good, 3 = Acceptable, 2 = Unacceptable, 1 = Poor

3/ Sugar Ratings: 0 = None, 1 = Approx 1/10%, 2 = Approx 1/4%, 3 = Approx 1/2%, 4 = 2% or more.
A Rating of Approx 1.0 to 1.2 corresponds to Approx 6 on NPCI Color Chart for Chips.
Ratings are at harvest.

CALIFORNIA TABLE 2. YIELD AND QUALITY MEASUREMENTS AT TULELAKE, 1977

Variety	Seed Source	Yield, cwt/A Total	No. 1's >12 oz	No. 1's 4-12 oz	<4 oz	2's & Culls	% No. 1's	Spec. Grav. 1.0--	Vine Rating 1/	Tuber Rating 2/	Sugar Rating 3/	Maturity
PART A. RUSSETS												
A70365-21	Ida	705	245	410	20	30	93	71	4.7	4.1	1.0	EM
A66122-3	Ida	520	85	370	35	30	88	74	4.2	3.6	1.0	M
Nor. Russet	Delta	505	100	345	40	20	88	70	3.8	3.7	1.0	E
Nor. Russet M	Neb	490	115	325	30	20	90	70	4.2	3.9	2.1	E
Centennial	Colo	490	60	345	35	50	83	73	4.0	2.9	1.5	M
A68678-1	Delta	450	75	295	40	40	82	79	4.6	4.1	0.8	M
BC8370-4	Delta	450	50	315	55	30	81	83	4.0	4.1	1.5	ML
WC316-1	Delta	420	150	235	15	20	92	78	4.0	4.2	0.7	M
WC285-141	Delta	415	125	240	15	35	88	76	4.0	3.9	0.4	M
Nooksack	Delta	410	160	165	10	75	79	74	4.0	3.1	0.9	ML
Nor. Russet 10	Neb	410	75	280	40	15	87	67	3.8	3.3	1.6	E
Rus. Burbank	Delta	405	20	275	65	45	73	76	4.4	3.6	0.8	L
WC285-18	Colo	395	70	235	30	60	77	77	4.0	2.3	1.2	M
NDA8451-3	Ida	395	80	215	55	45	75	56	3.6	3.0	1.3	E
A69173-2	Ida	390	35	290	50	15	83	82	3.8	3.3	0.9	EM
NDA8694-3	Ida	390	40	255	50	45	76	68	4.2	2.4	0.9	M
WN330-1	Ida	380	30	285	40	25	83	77	3.2	3.6	1.0	M
Butte	Ida	360	35	250	55	20	79	78	4.4	3.5	1.5	L
A70383-26	Ida	355	65	200	50	45	75	70	3.8	3.3	0.8	M
Arghee	Delta	350	55	240	35	20	84	70	4.0	3.5	1.1	ML
Centennial	Delta	340	30	235	30	45	78	74	4.2	2.3	1.3	ML
A70365-17	Ida	315	20	190	95	10	67	78	4.0	3.8	0.9	M
WC373-6	Delta	305	115	110	10	70	74	71	2.1	3.0	2.5	M
A70382-9	Ida	250	5	160	60	25	66	77	2.8	3.1	0.8	E
ND9642-3	ND	230	15	165	35	15	78	76	2.8	3.8	0.9	E

CALIFORNIA TABLE 2. YIELD AND QUALITY MEASUREMENTS AT TULELAKE, 1977

Variety	Seed Source	Yield, cwt/A Total	No. 1's >12 oz	No. 1's 4-12 oz	<4 oz	2's & Culls	% No. 1's	Spec. Grav. 1.0--	Vine Rating 1/	Tuber Rating 2/	Sugar Rating 3/	Maturity
PART B. WHITES												
Kennebec	Delta	620	235	235	20	130	76	66	4.8	2.9	1.0	EM
Atlantic	Delta	585	65	460	35	25	90	91	4.6	4.4	0.5	M
ND8891-3	Delta	580	130	375	25	50	87	72	4.2	4.0	0.8	EM
B6987-29	Maine	515	70	395	25	25	90	86	4.2	3.6	0.5	M
White Rose	Delta	510	85	270	45	110	70	67	4.5	2.0	1.0	EM
A70369-2	Ida	450	15	335	85	15	78	86	4.2	3.1	0.5	M
B7151-4	Delta	450	25	335	30	60	80	81	4.1	3.2	1.0	M
A503-42	Delta	380	90	230	30	30	84	77	4.3	3.3	1.8	M
ND9124-4	ND	375	15	310	40	10	87	74	4.0	3.8	0.8	M
WN352-1	Delta	305	45	230	20	10	90	88	4.0	3.8	0.9	M
ND9476-4	ND	290	0	210	65	15	72	82	3.4	3.1	0.5	EM
Superior	Neb	275	25	190	30	30	78	70	3.8	3.0	1.3	E
ND9333-2	ND	220	0	135	60	25	61	69	2.8	3.0	1.3	E
PART C. REDS												
Chieftain	Delta	565	85	430	30	20	91	74	4.1	3.8	1.0	M
ND9403-16R	ND	495	75	355	35	30	87	75	3.9	3.9	0.4	EM
Red LaSoda	Delta	485	80	330	35	40	85	69	4.2	3.0	1.4	EM
Bison	Delta	480	55	370	40	15	89	70	3.6	4.2	1.1	E
ND9403-19R	ND	420	10	355	30	25	87	81	3.3	3.0	0.5	E
ND7715-7R	Neb	360	55	230	30	45	79	63	3.1	3.3	1.3	EM
ND9403-21R	ND	245	5	185	15	40	78	69	2.5	3.3	1.3	E

1/ Vine Ratings: 5 = Excellent, 4 = Very Good, 3 = Good, 2 = Fair, 1 = Poor

2/ Tuber Ratings: 5 = Excellent, 4 = Good, 3 = Acceptable, 2 = Unacceptable, 1 = Poor

3/ Sugar Ratings: 0 = None, 1 = Approx 1/10%, 2 = Approx 1/4%, 3 = Approx 1/2%, 4 = 2% or more.
A Rating of Approx 1.0 to 1.2 corresponds to Approx 6 on NPCI Color Chart for Chips.
Ratings are at harvest.

CALIFORNIA TABLE 3. OBSERVATIONAL CLONES SELECTED FOR FUTURE EVALUATION

PART A. RUSSETS

Clones	Shafter	Tule-Lake	Butte Valley	Clones	Shafter	Tule-Lake	Butte Valley	Clones	Shafter	Tule-Lake	Butte Valley
A66126-4	X			ND9687-2	X			NDD277-2	X		
A68599-1	X			ND9713-2	X	X		NDD319-2	X		
A7079-4	X			ND9784-11	X			NDD326-4	X		
A70365-15	X			ND9795-8	X			NDD328-4	X		
AD7267-1	X			ND9823-4			X	NDD356-8	X		
AD7267-3	X	X		NDD11-2	X			NDD356-9	X		
AD72320-4	X			NDD28-6	X			WC338-1	X		
AD7320-2		X		NDD33-2	X			WC345-15	X	X	
AD7377-1	X			ND34-2		X		WN420-1	X		
AD73296-1	X			NDD47-1		X		WC447-1	X		
AD7429-5		X		NDD49-2	X			WD618-9	X		
AD7430-1		X		NDD52-2	X	X		WD627-3		X	
AD7481-2	X			NDD84-1	X	X		WD630-2	X		
AD7497-1		X		NDD85-5	X			WD630-4	X		
AD7497-2		X		ND102-3	X			WD631-2	X		
AD74103-3		X		ND133-3			X	WN631-22	X		
AD74104-4	X			NDD134-1	X			WD641-10	X	X	
AD74130-3		X		NDD143-1	X	X		WN667-10			X
AD74135-1		X		NDD147-4	X			WD694-1	X		
AD74135-9	X			NDD162-2		X		WD701-16	X		
AD74175-1		X		NDD162-6	X			WN701-30	X		
AD74198-2		X		NDD166-5		X		WN701-39	X		X
AD74332-1		X		NDD176-5	X			WN705-93	X		
AD74393-3	X			NDD237-4		X		WD706-2	X		
AD74458-2		X		NDD245-5	X			WN708-1	X		
AD74458-5	X			NDD246-13	X			WN708-5	X		
AD74548-2		X		NDD248-9		X		WD709-4		X	
NDA9249-3	X			NDD252-8	X			WN748-1			X
ND9551-4	X										

CALIFORNIA TABLE 3. OBSERVATIONAL CLONES SELECTED FOR FUTURE EVALUATION

Clones	Shafter	Tule-Lake	Butte Valley	Clones	Shafter	Tule-Lake	Butte Valley	Clones	Shafter	Tule-Lake	Butte Valley
					PART B. WHITES						
A70449-3	X	X		ND1-4	X			ND193-7	X		
A72601-2	X			ND1-13	X			ND194-1	X		X
AD7386-1	X			NDD28-3	X			ND194-7	X		
AD73414-1	X			ND41-7			X	NDD223-1	X	X	
AD7470-4		X		ND88-6	X			NDD237-5	X		
AD7470-6		X		ND97-2	X			NDD240-13	X		
AD7474-7		X		NDD110-4		X		NDD278-8	X		
AD74212-5	X			ND110-7	X			NDD278-10	X		
AD74228-1		X		NDD110-15			X	NDD278-11	X		
AD74548-5		X		ND129-6			X	NDD278-14	X		
ND9474-6	X			ND167-9	X			NDD278-16	X		
ND9508-1	X			ND168-9	X			NDD326-6	X		
ND9805-2	X			ND171-1	X			NDD334-2	X		
ND9813-1	X			ND186-1	X			NDD334-4	X		
ND9823-4	X			ND193-5	X			WD634-4	X		
					PART C. REDS						
Batoche (FS6339)	X	X									

COLORADO

J. A. Twomey and M. Workman

Potato Seedling and Varietal Evaluation

Seedling Program. Twenty thousand first-year potato seedlings from the Potato Breeding programs at Beltsville, Maryland, and Aberdeen, Idaho, were grown in 1977. From 277 second-year seedlings, 40 were selected for further testing. Fifty-four advanced seedlings were selected for testing in 1978.

Ninety clones were tested for chipping quality. Only those showing promise are included in Colorado Tables 1 and 2.

Yield Trial. Eleven varieties and advanced seedlings were planted on Fall-plowed second-year potato ground on May 15. Each plot was two rows 20 feet long and four replications. Fertilizer (16-20-0) was applied at planting at the rate of 350 lbs./A. Row spacing was 34 inches with seedpieces spaced 12 inches in the row. Plots were harvested September 13.

Yield and grade data may be found in Colorado Table 3. All clones tested are russet types with the exception of A67560, which is a red potato.

Colorado Table 1. Chip Color[1/] of Second-Year Seedlings at Harvest.

Seedling No.	Color[1/]	Seedling No.	Color[1/]
BC9260-4	39.0	BC9294-5	35.5
BC9261-4	37.0	BC9298-3	31.0
BC9262-2	34.0	BC9298-5	35.0
BC9263-1	37.0	BC9304-1	39.0
BC9263-5	40.5	BC9304-15	32.0
BC9263-6	41.0	BC9306-8	30.0
BC9265-5	37.0	BC9308-1	35.0
BC9266-2	37.0	BC9312-4	29.5
BC9266-4	40.0	BC9312-6	30.0
BC9283-4	39.0	BC9314-6	34.0
BC9284-8	30.0	BC9315-5	40.0
BC9288-1	42.0	BC9330-1	34.0
BC9289-2	29.5	BC9330-2	31.0
BC9290-2	29.5	ND701-16	35.5

[1/] Chip color determined with Photovolt reflectance meter. Color readings above 25 are acceptable.

Colorado Table 2. Chip Color[1/] and Specific Gravity[2/] of Promising Advanced Seedlings at Harvest and After Storage.

Seedling No.	At Harvest	3 Wks 65° F Post Harvest	10 Wks. Storage @ 50° F	Warmed 2 Wks @ 65° F 10 Wks. Storage @ 40° F	Warmed 2 Wks @ 65° F 10 Wks. Storage @ 50°F	Specific Gravity
	Color	Color	Color	Color	Color	
WC630-2	37.0	39.0	20.0	16.5	26.5	1.082
BC8559-1	36.0	39.0	25.5	29.5	26.0	1.088
BC8559-2	36.0	35.0	25.0	27.0	30.0	1.093
BC9020-1	35.5	39.5	22.0	12.0	33.0	1.090
BC9020-7	44.0	40.0	27.0	21.0	32.0	1.085
BC9035-7	37.0	33.0	27.0	22.0	32.0	1.085
BC9035-11	46.0	38.0	26.0	28.0	25.0	1.095
BC9071-6	39.5	41.0	30.0	16.0	35.5	1.087
BC9099-3	46.0	49.0	40.0	31.0	40.0	1.101
BC9103-3	42.0	46.5	42.0	35.0	35.5	1.095
WC612-6	36.5	42.0	35.0	25.0	35.0	1.093
WC672-2	36.0	40.0	29.5	23.0	33.0	1.093
A68678-1	34.0	38.0	34.0	24.0	30.0	1.097
WC686-3	42.0	43.0	30.0	25.0	34.0	1.106
WC521-12	43.0	32.0	26.0	21.0	31.0	1.110
Atlantic	36.0	40.0	29.0	30.0	36.0	1.102
Nooksack	36.0	35.0	30.0	25.5	32.0	1.100

[1/] Chip color determined with Photovolt reflectance meter. Color readings of 25 and above are acceptable.

[2/] Specific gravity determined by potato hydrometer.

Colorado Table 3. Yield and Grade for 1977 Variety Trial at San Luis Valley Research Center.

Selection	Yield Per Acre: U. S. No. 1 4-10 oz.	U. S. No. 1 >10 oz.	U. S. No. 2	Culls	B size <4 oz.	Total	Total U. S. No. 1	U. S. No. 1
	Cwt	Cwt	Cwt	Cwt	Cwt	Cwt	Cwt	%
Rus. Burbank	142.3	30.8	31.6	11.0	81.8	297.5	173.1	58.2
Centennial Rus.	249.8	43.0	06.1	00.8	48.2	347.9	292.8	84.2
WC230-14	188.1	76.6	21.6	04.4	32.2	322.9	264.7	82.0
BC8370-4	213.5	35.1	05.9	02.2	52.6	309.3	248.6	80.4
WC415-12	151.7	86.7	16.7	01.2	14.9	271.2	238.4	87.9
WC316-1	175.1	41.1	09.2	01.2	36.1	262.7	216.2	82.3
WC415-14	208.9	57.8	10.9	03.7	37.7	319.0	266.7	83.6
WC435-3	261.8	30.3	07.5	00.0	80.4	380.0	292.1	76.9
A67560	252.9	98.9	09.4	00.0	37.7	398.9	351.8	88.2
WC285-18	234.1	45.3	14.5	01.4	57.1	352.4	279.4	79.3
WC415-1	189.9	25.6	10.1	01.4	54.3	281.3	215.5	76.6

IDAHO - WISCONSIN

M. D. Groskopp, L. Williams & G. Weis

Potato Variety Trials

Two trials were conducted of 20 varieties each at Blackfoot, Idaho and at the University of Wisconsin Experiment Station, Hancock, Wisconsin.

Each variety was replicated four times in a randomized complete block design. The potatoes were planted in single row plots at a 12 inch spacing with 21 hill plots in Idaho (21 feet long) and 20 hill plots in Wisconsin (20 feet long). All seedpieces were cut to 1½-2 ounce size and treated with Captan dust.

Tuber solids (dry matter) was determined by oven drying.

Idaho Trial (Table 1, 2, 3 & 4). Seed tubers were planted with an assist feed planter on May 2, 1977. Fertilizer was broadcast and soil encorporated pre-plant as follows: N - 225 lbs./A.; P_2O_5 - 100 lbs./A.; K_2O - 150 lbs./A.; Zn - 10 lbs./A. Additional N was applied through the irrigation system in July at 20 lbs./A.

Insecticide applied: Temik @ 3 lbs./A. banded at planting.
Herbicides: Eptam @ 5 lbs./A. broadcast pre-plant and encorporated.
Fungicides: Bravo was applied three times @ 1½ pints per acre.
Rainfall: April through September - 3.49".
Irrigation: May through August - 26.5".
Vine Kill: Vines beaten off on September 7, 1977.
Harvest: September 24, 1977.

Wisconsin Trial (Table 1, 2, 3 & 5). Seed tubers were planted by hand on April 25, 1977. Fertilizer was applied as follows: Broadcast pre-plant - $ZnSO_4$ @ 30 lbs./A.; 0-0-60 @ 300 lbs./A.; 0-0-22 (Sul-po-mag) @ 600 lbs./A. Banded at planting 6-24-24 @ 560 lbs./A. Side dressed 34-0-0 @ 600 lbs./A.

Insecticide applied: Temik @ 2 lbs./A. banded pre-plant. Sevin and Monitor sprays.
Herbicides: Maloran @ 1.5 lbs./A. pre-emergence.
Fungicides: Difolatan - 12 applications @ 7 day intervals.
Rainfall: April through September - 21.36".
Irrigation: May through August - 21.7".
Vine Kill: September 6, 1977.
Harvest: September 19, 1977.

Idaho-Wisconsin Table 1. Variety Trials - 1977 - Yield, Solids, Tuber Type

Variety	Idaho Yield Cwt./A.	Idaho Percent Solids	Wisconsin Yield Cwt./A.	Wisconsin Percent Solids	Tuber Type
Russet Burbank	341	22.6	698	21.0	Long Russet
A63126-9	310	22.8	642	23.4	R. Oblong Russet
Butte (A6371-2)	375	25.4	677	23.0	Long Russet
A66107-207	362	24.3	571	22.3	Oblong-long lt. Russet
A6595-13	348	28.9	559	27.0	R. Oblong lt. Russet
A5400-47	135	22.3	391	21.9	R. Oblong white
A66107-116	438	22.8	729	21.8	R. Oblong Russet heavy net
A68678-1	343	24.4	737	22.6	Oblong-long Russet heavy net
A68113-4	430	23.3	671	21.3	R. Oblong white
ND8891-3	586	23.2	810	20.1	R. Oblong white
Belle Isle	362	24.6	647	21.5	R. white
A69327-5	398	23.7	632	22.0	Oblong-long Russet heavy net
A701040-3	387	21.2	530	20.0	Oblong-long white
A701057-5	372	22.4	645	20.3	R. Oblong - lt. Russet to white
A70271-6	461	23.7	741	21.6	R. Oblong - lt. net to white
Tobique	391	23.5	475	19.5	R. white - pink eyes
W723	399	24.8	603	21.5	R. white
W729R	535	22.2	698	18.8	R. red
W738	430	25.7	669	21.2	R. Oblong white
Atlantic	381	24.5	603	20.9	R. white

Idaho-Wisconsin Table 2. U.S. No. 1's & External Defects

Variety	Idaho			Wisconsin		
	Percent U.S. No. 1's	Defects Percent	Defects Type	Percent U.S. No. 1's	Defects Percent	Defects Type
Russet Burbank	76.6	12.7	Malf., S.G.	71.5	23.3	Malf. S.G.
A63126-9	84.2	10.4	Malf., S.G. H. Rhizoc & Fus.	81.3	12.3	Malf., S.G. E.H.
Butte (A6371-2)	80.4	12.3	Malf. & S.G.	84.7	9.1	Malf., S.G.
A66107-207	83.6	4.9	Malf., S.G. Enl. Lent.	83.5	8.9	Malf., S.G.
A6595-13	88.4	4.7	Malf., Scab	83.2	8.3	Malf.
A5400-47	76.0	6.4	Malf., H. Rhizoc, Scurf	77.6	11.3	Malf.
A66107-116	89.4	3.9	Malf., H. Rhizoc & Fus.	77.2	18.4	Malf., Ptd. ends
A68678-1	85.2	5.2	Malf., G.C. & El. Hide	89.9	6.4	Malf., G.C. & E.H.
A68113-4	82.7	11.2	Malf., En. Lent., H. Rhizoc, Pit Scab	74.6	14.4	Malf. & Pit Scab
ND8891-3	87.6	8.1	G.C., Ptd. End, H. Rhizoc, Trace Scab	86.6	10.0	Malf. & G.C.
Belle Isle	89.4	4.7	Malf., Enl. Lent., H. Rhizoc, Pit Scab	87.6	7.9	Malf.

Idaho-Wisconsin Table 2. (cont'd.)

Variety	Idaho Percent U.S. No. 1's	Idaho Defects Percent	Idaho Defects Type	Wisconsin Percent U.S. No. 1's	Wisconsin Defects Percent	Wisconsin Defects Type
A69327-5	86.1	8.3	Malf., El. Hide, Rhizoc Scurf	73.5	20.8	Malf., S.G.
A701040-3	86.9	7.3	Malf., Ptd. Stem End	84.8	6.4	Malf.
A701057-5	68.7	23.6	Malf., Enl. Lent., Ptd. Ends, Trace Scab	63.8	30.3	Malf., S.G. & G.C.
A70271-6	75.3	20.0	Malf., G.C. Ptd. Ends, S.G., Trace Scab	63.0	28.9	Malf.
Tobique	90.0	7.1	Malf., G.C. H. Rhizoc, Trace Scab	87.4	7.8	Malf.
W723	85.4	7.9	Malf., Ptd. Stem Ends, Trace Scab	88.1	5.7	Malf.
W729R	92.2	6.0	Malf., G.C.	92.5	5.0	Malf., & S.G.
W738	93.1	2.6	Malf., S.G. Trace Scab No Rhizoc Scurf	92.2	4.7	Malf.
Atlantic	85.8	8.7	Malf., H. Rhizoc, Fus.	88.8	7.0	Malf.

Idaho-Wisconsin Table 3. Variety Trials - 1977 - Tuber Size

Variety	Idaho		Wisconsin	
	Percent of US No. 1's			
	7-13 ounces	>13 ounces	7-13 ounces	>13 ounces
Russet Burbank	40	4	47	10
A63126-9	39	14	30	5
Butte (A6371-2)	42	19	44	7
A66107-207	27	3	41	8
A6595-13	30	5	32	4
A5400-47	22	5	31	0
A66107-116	41	10	51	12
A68678-1	33	6	55	21
A68113-4	41	15	27	2
ND8891-3	37	12	49	8
Belle Isle	34	9	48	20
A69327-5	42	11	54	12
A701040-3	44	3	46	9
A701057-5	47	20	53	21
A70271-6	32	4	37	1
Tobique	45	16	54	15
W723	30	5	43	18
W729R	50	23	52	26
W738	39	8	52	12
Atlantic	34	11	45	11

Idaho Table 4. Varieties - 1977 - Solids & Internal

Variety	Solids	% Hollow Heart	Brown Spot %	Other Internal Defects
Russet Burbank	22.6	3	20	Net Necrosis - Rep. I & IV
A63126-9	22.8	13	--	Trace black spot
Butte (A6371-2)	25.4	0	--	Trace black spot
A66107-207	24.3	13	13	Trace black spot
A6595-13	28.9	0	--	Severe black spot
A5400-47	22.3	0	20	-------
A66107-116	22.8	0	--	Trace black spot
A68678-1	24.4	15	--	Black spot
A68113-4	23.3	0	--	Trace black spot
ND8891-3	23.2	3	60	-------
Belle Isle	24.6	0	--	Trace black spot
A69327-5	23.7	3	--	Trace black spot
A701040-3	21.2	0	--	Trace black spot
A701057-5	22.4	0	8	-------
A70271-6	23.7	3	--	-------
Tobique	23.5	5	--	-------
W723	24.8	0	3	-------
W729R	22.2	3	--	Trace black spot
W738	25.7	5	30	Heat Necrosis
Atlantic	24.5	0	13	Black spot

Wisconsin Table 5. Varieties - 1977 - Solids

Variety	Solids	Percent Hollow Heart	Percent Brown Spot Heat Necrosis	Internal Appearance
Russet Burbank	21.0	15	20	Color-white, brown spot, heat necrosis and trace black spot
A63126-9	23.4	20	0	Color-V. white, trace brown spot
Butte (A6371-2)	23.0	5	0	Color-white, trace of black spot and brown spot
A66107-207	22.3	35	12	Color-white, brown spot
A6595-13	27.0	2	0	Color-white, trace of black spot and internal necrosis
A5400-47	21.9	35	0	Color-white, trace of brown spot, necrosis & stem end browning
A66107-116	21.8	2	0	Color-V. white, trace of black spot and brown spot
A68678-1	22.6	22	7	Color-white, heat necrosis, brown spot and trace of black spot
A68113-4	21.3	0	5	Color-white, trace stem end & brown spot
ND8891-3	20.1	32	27	Color-white, brown spot, heat necrosis and trace of black spot
Belle Isle	21.5	10	0	Color-white, trace of brown spot & necrosis
A69327-5	22.0	10	0	Color-V. white, trace black spot
A701040-3	20.0	0	0	Color-V. white
A701057-5	20.3	5	20	Color-white, heat necrosis, internal brown spot, trace black spot
A70271-6	21.6	3	0	Color-white, trace black spot
Tobique	19.5	5	0	Color-white, trace brown spot
W723	21.5	0	0	Color-V. white, trace black spot
W729R	18.8	0	0	Color-V. white, trace black spot
W738	21.2	0	0	Color-white, trace black spot, trace necrosis
Atlantic	20.9	5	20	Color-white, heat necrosis, internal brown spot

PACIFIC NORTHWEST (IDAHO & EASTERN OREGON)

J. J. Pavek, D. Corsini, C. Stanger, & Sheri Michener

Yield Trials

Weather. The Pacific Northwest experienced a severe drought from the fall of 1976 until November 1977. Consequently, unirrigated potato fields were very dry at planting. This plus below average (4 to 5° F lower) May temperature resulted in some poor stands. Very warm June temperatures (6° F above normal) followed by moderate July and August temperatures (1 to 2° F below normal) resulted in very good yields of large tubers.

As in previous years, advanced late harvest trials were conducted at the Aberdeen and Twin Falls (Kimberly) Stations in Idaho and at Malheur Station, Ontario, Oregon. The advanced early harvest trials were conducted at the Aberdeen and at Malheur Stations. The soils at each location were silty loams. Fertilization was based on soil tests according to University recommendation. Eptam and Treflan were used pre-emergence to control weeds at Aberdeen and Kimberly, and Eptam alone at Malheur. Temik was used at Aberdeen and Kimberly for insect control. Water was applied as needed by sprinkler at Aberdeen and in furrows at the other two locations.

The yields and quality for the late harvest entries were generally very good at all three locations. Poor stands for A70386-9 and A70286-2 at Aberdeen and Kimberly resulted in lower than expected yields (PNW Table 1). A69868-2, A66102-16, A67142-1, A68678-1, and A69327-5 appear to be the most promising clones in this trial. The early harvest entries yielded much better at Malheur Station than at Aberdeen (PNW Table 2). NDA8694-3, A6948-4, and A68710-5 appear to be the most promising clones at the two locations.

Disease Reactions

All selections in the advanced yield trials were evaluated for resistance to *Verticillium* wilt, common scab, early blight (foliar and tuber), *Fusarium* dry rot (two species), leafroll (foliar and net necrosis), PVX, and PVY. The results are presented in PNW Table 3. All early generation selections were evaluated for *Verticillium* wilt, common scab, and *Fusarium* dry rot resistance.

Distribution

A summary of distribution of breeding selections, named varieties, and seedling tubers during 1977 is shown in PNW Table 4.

PNW Table 1. Advanced late harvest yield trial, 1977. Tuber yields & quality.

Clone	Loc[1]	Total cwt/A	U.S. No. 1 Tot %	U.S. No. 1 >10 oz %	Spec. Grav.	French Fries[2] Color	French Fries[2] Dark Ends %	Hollow heart >10 oz %	Shape, Rus.[3]
A69657-4[4]	Ab	416	90	59	1.092	0.6	2	-	O-L, V. lt
	TF	473	86	36	85	0.5	21	3	
	Mal	390	86	38	92	0.5	15		
A68113-4	Ab	372	80	43	86	1.0	9	-	L-O, Lt (Blt)
	TF	461	71	27	82	0.7	8	0	
	Mal	501	68	30	91	0.6	23		
A69868-2	Ab	369	74	49	85	0.7	28	-	O, V. lt
	TF	449	79	48	78	0.5	26	0	
	Mal	537	81	49	88	0.8	46		
A66107-51	Ab	364	64	40	74	1.1	6	-	O-L M
	TF	390	83	43	76	0.9	5	6	
	Mal	406	78	41	84	1.0	25		
Butte	Ab	335	77	46	88	0.9	0	-	L, M⁻
	TF	427	85	40	83	0.7	0	0	
	Mal	433	84	33	92	0.9	17		
A66102-16	Ab	333	64	24	84	1.2	3	-	O-L, Lt
	TF	391	87	24	85	0.5	5	0	
	Mal	406	89	52	96	0.6	35		
A67142-1	Ab	316	85	62	91	0.6	8	-	O, (Wt)
	TF	374	88	56	82	0.5	4	0	
	Mal	362	89	51	93	0.5	0		
A68678-1	Ab	303	71	44	88	0.5	0	-	L-O, M
	TF	411	74	33	93	0.5	2	5	
	Mal	425	82	43	93	0.5	4		
A70386-7	Ab	300	68	36	81	0.7	17	-	O-L, Lt
	TF	360	82	33	81	0.5	8	0	
	Mal	436	81	31	89	0.5	19		
A70365-15	Ab	296	69	27	94	0.5	19	-	O-L, V. lt
	TF	382	76	14	85	0.5	8	0	
	Mal	422	83	26	95	0.5	35		
Russet B.	Ab	293	75	48	86	0.7	15	-	L, M
	TF	347	64	19	80	0.5	32	3	
	Mal	447	74	25	86	0.6	36		
A69327-5	Ab	229	80	43	84	0.7	8	-	O-L, M⁻
	TF	407	91	46	82	0.5	13	0	
	Mal	454	89	46	90	0.5	27		
A69870-10	Ab	283	79	39	84	0.9	0	-	O-L, V. lt
	TF	429	80	35	85	0.5	14	8	
	Mal	444	84	39	88	0.6	34		
A69827-4	Ab	281	82	39	79	2.0	14	-	O-L, M⁻
	TF	360	91	45	79	0.5	23	0	
	Mal	369	88	41	85	0.9	35		
A70386-9	Ab	281	68	40	80	0.5	4	-	O, (Wt)
	TF	363	82	41	80	0.5	8	0	
	Mal	308	76	38	84	0.6	13		

PNW Table 1. continued

Clone	Loc[1]	Total cwt/A	U.S. No. 1 Tot %	U.S. No. 1 >10 oz %	Spec. Grav.	French Fries[2] Color	French Fries[2] Dark Ends %	Hollow heart >10 oz %	Shape Rus.[3]
A70365-6	Ab	272	58	29	1.072	1.3	0	-	O-L, M⁻
	TF	408	84	56	76	0.7	2	7	
	Mal	470	88	57	85	1.1	0		
A69823-2	Ab	269	73	34	74	0.8	12	-	O, (Wt)
	TF	365	87	43	78	0.4	28	3	
	Mal	419	78	23	79	0.6	50		
A70286-2	Ab	263	78	44	82	0.9	14	-	O-L, M
	TF	248	70	38	76	0.4	24	19	
	Mal	409	78	33	86	0.5	32		
A66126-4	Ab	231	78	30	84	0.8	23	-	L-O, M+
	TF	351	76	32	78	0.6	24	3	
	Mal	341	67	19	85	0.7	50		
Targhee	Ab	214	63	28	78	1.2	17	-	O, M. hv.
	TF	377	85	53	77	0.6	25	0	
	Mal	383	87	42	88	0.6	59		
A70906-1	Ab	205	71	38	86	1.0	17	-	L-O, Lt.
	TF	246	79	47	84	0.7	10	0	
	Mal	307	74	31	89	0.8	16		
A(TD)27-1	Ab	204	78	69	77	0.7	19	-	O, M
	TF	358	88	35	72	0.4	22	3	
	Mal	423	90	58	80	0.5	32		
(C)12-1	Ab	181	68	12	90	0.6	0	-	O, Lt
	TF	397	81	30	84	0.6	0	8	
	Mal	360	65	10	91	0.7	13		
A70383-24	Ab	132	85	56	75	0.5	0	-	O-L, M
	TF	297	73	38	70	0.5	6	24	
	Mal	390	76	31	76	0.6	39		
LSD .05	Ab	81			.005	0.4			
	TF	64			.003	0.2			
	Mal	40			.004	0.3			

1/ Ab = Aberdeen, TF = Twin Falls, Idaho; Mal = Malheur Station, Oregon. 20 hills, 4 reps, Aberdeen and Malheur; 20 hills, 5 reps, Twin Falls.

2/ Stored for 3 months at 45°F prior to french frying; 0.5 (lightest) to 4.0 (darkest).

3/ O = oblong, L = long; Lt = light, M = medium, Hv = heavy, Blt = blotchy, russeting; (Wt) = white; V = very.

4/ A69657-4 is 50% gp. andigena.

PNW Table 2. Advanced Early Harvest Yield Trial (4 reps of 20 hills) - 1977

Clone	Malheur Station (Oregon)[1/] Total cwt/A	U.S. No. 1 Tot %	U.S. No. 1 >10 oz %	Spec. Grav.	FF[2/] Clr.	Hollow heart >10 oz %	Aberdeen Station (Idaho)[1/] Total cwt/A	U.S. No. 1 Tot %	U.S. No. 1 >10 oz %	Spec. Grav.	FF[2/] Clr.	Shape Rus.[3/]
A(LR)22-2	478	80	45	1.089	1.0	15	190	72	20	1.076	1.6	O, Lt
NDA8694-3	458	89	50	87	0.9	0	238	73	25	75	0.5	O, M.lt
A6948-4	444	83	43	81	0.7	3	187	78	29	80	1.2	O, (Wt)
A68588-16	433	87	60	81	0.5	3	187	81	30	76	1.0	O, (Wt)
A66107-12	430	89	28	86	1.0	0	140	80	18	74	1.9	O, M
A68710-5	425	85	48	86	1.2	0	167	83	13	73	2.5	L-O, M
A68587-3	412	63	30	86	0.9	33	134	65	34	73	0.7	O, Lt
Atlantic	411	88	42	92	0.5	60	194	79	27	91	0.8	R, Lt
A70879-3	397	82	44	69	0.7	0	197	83	24	77	0.9	L-O, (Wt)
Pioneer	396	86	48	79	0.7	8	121	84	38	75	1.1	O, (Red)
A701040-3	390	87	29	88	0.8	0	126	79	17	73	3.0	L-O, (Wt)
(C)6-5	371	84	44	82	0.6	17	57	83	9	78	2.0	O, M+
A68599-1	364	88	40	83	0.5	0	157	74	14	78	1.0	O, M
(C)26-9	356	84	48	87	0.8	25	133	86	27	72	1.5	L-O, (Wt)
A6680-5	355	78	39	85	0.7	90	173	83	15	79	0.6	L-O, M
NDA9249-3	354	87	45	78	0.5	78	112	84	16	76	2.4	L-O, M
Norgold Rus.	333	79	33	75	1.4	43	146	73	16	74	1.0	O, M
A70369-2	312	77	10	94	2.3	5	84	69	14	71	2.3	L-O, (Wt)
NDA9293-2	297	85	39	72	2.1	3	31	122?	76	72	2.5	O-L, V. lt
(C)44-12	293	84	28	97	0.6	0	132	78	15	83	2.2	L-O, V. lt
A71617-3	215	41	9	86	0.5	-	43	90	11	75	2.2	O-L, M
LSD .05	55			.006	0.5					.006	1.2	

1/ Malheur trial planted 4/20, harvested 8/15; Aberdeen trial planted 5/3, harvested 8/18.

2/ Malheur samples fried 2 to 7 days after harvest, Aberdeen samples fried 6 to 15 days after harvest; stored at 45° until frying. 0.5 (light) to 4.0 (dark).

3/ See footnote 3, PNW Table 1; R = round.

PNW Table 3. Disease Evaluations for Advanced Selections - 1977

Clone	Maturity[1/]	Vert. Wilt	Early Blight		Common Scab	Fusarium[3/] Dry Rot	Primary Leafroll		Latent[4/] Virus	
			Foliage	Tuber			Foliage	Net Necrosis	PVX	PVY
Late Harvest										
A66102-16	3.6	1.6[2/]	1.9	1.7	0.5	1.8	3.9	2.4	+	+
A66107-51	3.9	1.1	1.5	2.8	0.1	3.0	0.5	1.8	+	+
A67142-1	3.4	0.7	1.9	0.5	0.7	2.4	2.2	2.0	+	+
A68113-4	3.8	0.6	1.4	3.1	2.6	3.3	1.2	0.8	+	+
A68678-1	3.1	2.6	3.2	0.4	0.1	2.4	5.0	0.8	+	+
A69327-5	3.4	2.1	2.3	1.6	0.1	2.7	4.6	1.3	+	+
A69657-4	3.0	2.4	3.0	0.7	1.0	2.4	4.6	1.3	+	+
A69827-4	3.4	1.8	1.5	1.6	0.1	1.4	3.9	2.3	-	+
A69868-2	3.0	2.4	4.0	0.2	0.7	1.2	2.9	1.1	+	+
A69870-10	3.0	1.8	2.3	1.1	0.0	2.0	2.9	2.6		+
A(TD)27-1	3.5	2.5	2.4	3.7	0.1	1.9	4.6	1.5	+	+
(C)12-1	3.3	3.0	2.6	0.5	0.4	3.7	3.9	1.2	+	+
A66126-4	3.1	3.4	2.4	2.2	0.1	4.0	3.4	4.7	+	+
A69823-2	3.6	3.0	2.7	1.1	1.7	1.3	3.9	1.7	+	+
A70286-2	3.1	3.4	2.6	0.3	0.1	2.3	4.6	2.6	+	+
A70365-6	3.3	3.4	2.3	1.4	0.5	3.5	4.6	2.7	+	+
A70365-15	3.5	1.7	2.5	2.3	0.1	3.2	2.2	1.1	+	+
A70383-24	3.1	3.1	3.0	4.0	0.1	3.0	4.6	3.2	+	
A70386-7	3.8	1.6	2.0	1.5	0.1	2.0	1.7	1.3	+	+
A70386-9	3.8	2.4	2.7	1.4	0.1	2.0	2.9	2.4	+	+
A70906-1	2.6	4.4	3.2	0.5	0.9	1.8	3.9	2.1	+	+
Butte	3.4	3.1	2.4	0.9	0.1	2.1	3.9	1.4	-	+
Russet B.	3.0	3.5	2.4	1.0	0.1	2.8	5.0	2.6	+	+
Targhee	3.3	2.8	2.3	1.3	0.0	2.3	4.6	2.0	-	+
A63126-9	3.5	3.1	3.0	1.9	0.1	3.7	4.6	0.8		+
A66122-3	3.5	2.2	2.7	2.1	0.0	3.2	1.2	2.6		

PNW Table 3. continued

Clone	Maturity[1/]	Vert. Wilt	Early Blight		Common Scab	Fusarium[3/] Dry Rot	Primary Leafroll		Latent[4/] Virus	
			Foliage	Tuber			Foliage	Net Necrosis	PVX	PVY
Early Harvest										
A6680-5	2.2	4.8[2/]	4.7	0.7	0.1	2.5	5.0	3.0		+
A66107-12	2.2	4.2	4.3	0.3	0.1	2.0	2.9	2.7		+
A68587-3	3.5	3.3	1.3	0.3	1.2	1.7	4.3	2.5		+
A68588-16	3.2	3.9	1.0	0.6	0.2	2.3	3.4	2.9	+	+
A68599-1	2.7	4.4	4.7	0.2	0.1	3.3	5.0	0.7	+	+
A68710-5	3.0	4.6	2.3	2.3	0.1	4.3	4.3	1.1		+
A(LR)22-2	2.0	4.8	5.0	0.7	0.8	1.2	5.0	1.0		+
NDA8694-3	1.3	5.0	5.0	0.2	0.1	1.8	2.2	0.9	+	+
A6948-4	2.5	1.9	2.3	1.8	1.0	1.3	3.9	1.5		+
A70369-2	2.0	4.8	4.7	0.2	0.2	3.5	5.0	2.2		+
A70879-3	3.0	3.9	4.7	0.3	0.8	4.5	3.9	1.4	+	+
A701040-3	3.2	4.2	3.0	1.5	0.9	2.8	5.0	2.3	+	+
A71617-3	1.5	5.0	4.7	0.3	0.0	3.8	4.6	1.9	+	+
(C)6-5	2.0	3.6	5.0	3.0	0.2	4.5	5.0	0.5	-	+
(C)26-9	2.7	4.2	3.7	0.7	0.2	3.2	5.0	2.7		
(C)44-12	2.7	3.6	3.0	0.5	0.8	2.8	3.9	2.5		+
NDA9249-3	3.0	3.8	3.3	0.2	1.9	3.8	4.6	1.6		+
NDA9268-2	2.0	4.6	4.7	1.1	0.3	3.7	3.4	0.7		+
NDA9293-2	3.2	4.8	1.0	0.2	0.3	3.0	4.6	2.5		+
Atlantic	2.3	4.2	2.3	0.1	1.9	2.3	3.4	0.5		
Norgold	1.8	4.8	5.0	0.2	0.4	1.8	5.0	1.2	+	+
Pioneer	2.0	4.2	3.7	1.3	0.8	1.0	4.3	0.8	+	+

1/ Maturity on scale of 1 to 5 with 1 being very early and 5 being very late.

2/ All ratings on scale of 0 to 5 with 0 being no symptoms observed (highly resistant) and 5 being maximum symptom expression (highly susceptible).

3/ *Fusarium* dry rot scores are for 1976 crop. 1977 evaluations are in progress.

4/ Latent Virus ratings are + (susceptible), - (resistant).

PNW Table 4. Distribution of Selections, Varieties, and Seedlings - 1977.

Location	Cooperator	Number
Clones		
Alaska	C. Dearborn	2
Canada	W. A. Russell	12
	G. Johnston	1
	D. Young	1
California	H. Timm	1
	R. Voss	31
Idaho	G. Anderson	2
	G. Petersen	7
	T. Rudy	7
	S. Sorenson	1
	G. Vogt	23
	L. Williams	9
Indiana	H. Erickson	2
Japan	H. Stellar	4
Kansas	R. Toten	6
Maryland	R. Webb	1
Michigan	R. Chase	3
Minnesota	F. Lauer	2
Missouri	V. Lambeth	2
Nebraska	R. O'Keefe	2
North Dakota	R. Johansen	3
Ohio	F. Lower	2
Oregon	O. Gutbrod	1
South Dakota	P. Prasher	2
Spain	P. de la Hera	15
Texas	J. C. Miller Jr	18
Washington	W. Hoyman	2
Wisconsin	M. Martin	20
	D. Kichefski	2
	R. Hanneman Jr	4
Wyoming	K. Bohenblust	3
New Jersey	R. Nickeson	3
Seedlings		(Families)
California	R. Voss	81
Colorado	J. Twomey	141
North Dakota	R. Johansen	74
Texas	J. C. Miller Jr	103

MAINE

S. S. Leach, Raymon E. Webb and David Wilson

Resistance to Fusarium Tuber Rot (Fusarium roseum 'Sambucinum'). Inoculum for this test was grown on potato dextrose agar. Spores were washed from seven day old cultures and adjusted to 5000 per ml. The tubers of the test clones were inoculated with a hypodermic syringe midway between the bud and stem ends. The inoculum (100 spores) was injected into the tubers 7 mm below the tuber surface. The inoculated tubers were stored in a controlled environment room maintained at 55°F (13°C) and 95 percent relative humidity for 21 days. At the end of the storage period, the tubers were removed and scored for tuber rot development and amount of sprouting. The degree of rot in a tuber was determined by cutting through the inoculation sites and observing the degree of infection. This year, to comply with the format of this report, the ratings are from 0-9, where 0 = unrestricted growth of fungus in tuber and 9 = no infection detected. The rating for the susceptible standard, Russet Burbank, was 2. One pedigree, B7200-33, appeared to be immune to tuber rot. Nine of the new clones tested showed no sprouting after four months stored at 55°F (13°C). Line B7200-33, B7283-6, and B8429-9 all developed sprouts of 1-2" (2.5-5 cm) in length during the same period. (Table 1)

Maine Table 1. Varieties and pedigrees tested in Fusarium tuber rot resistance-sprouting trials -- 1977-1978

Variety	Fusarium Rating 1/	Sprouting Rating 2/
Russet Burbank	2	9

Repeat clones from 1976

Pedigree	Fusarium Rating	Sprouting Rating
B7200-33 3/	9	0
B7783-6	7	0
B8429-9	3	0

New Clones - 1977

Pedigree	Fusarium Rating	Sprouting Rating
B6969-2	7	5
B6987-43	6	9
B7802-2	7	5
B8392-5	2	5
B8697-34	7	5
B8784-5	out	out
B8822-2	5	9
B8822-6	8	5
B8822-9	6	9
B8822-27	3	9
B8822-29	6	9
B8822-43	6	9
B8824-13	8	9
B8847-8	8	9
B8862-3	3	5
B8921-2	3	9
B8922-15	8	5
B8926-1	3	5

1/ Rating of nine (9) equals no observable disease present.

2/ Rating of nine (9) equals no sprouts observed; five (5) equals piping; and zero (0) equals sprouts over 2" long.

3/ This clone was also rated 9 when inoculated with *F. solani coeruleum*.

MAINE - 1977

Hugh J. Murphy and Leigh S. Morrow

Cooperative potato variety trials were conducted during 1977 at Presque Isle, Grand Isle, and Newport, Maine. Soil and weather conditions at planting time were dry and cool. During the growing season, June was extremely wet, July rainfall below normal followed by very wet conditions the first week in August. September rainfall was slightly above normal but very cold and windy.

Plots at all test sites were single rows, 25 feet long, and replicated six times per variety. Planting, killing, harvest dates, seedpiece spacing, and fertilization rates used are presented for all tests in Maine Table 4.

Yields and specific gravities for all varieties grown at all Maine locations are presented in Maine Table 1. The ten highest yielding varieties considering the all-location average were: CC53-8A, B7845-4, B8086-3, W564-3, AF173-2, B7629-1, AF32-8, AF197-7, B8148-4, and WC330-1. The ten highest varieties in specific gravity were: B6987-184, W524-5, AF186-2, AK28, CD130-7R, CD134-2, B7684-6, Campbell 11, AK37-19, and B6986-137. Of the 95 varieties tested in Maine during 1977 at one or more location, only 44 varieties had a specific gravity of 1.075 or higher, 15 had specific gravities higher than 1.080, and only four were 1.090 or higher which suggests that 1977 was not a good high dry matter production year in Maine.

Size determinations of tubers for two U.S. market grade size classes are presented for each variety in Maine Table 2. Many varieties produced low percentages of U.S. No. 1 (Size A) yields even in a year which presumably had above normal moisture conditions. Growth cracks, hollow heart, and other tuber abnormalities were also very plentiful in the 1977 trials.

Results of the first chipping and french fry color tests are presented in Maine Table 3. Very few of the varieties grown at Presque Isle and Grand Isle produced acceptable chip color (7.0 or less) in 1977. Campbell 11, AF186-2, BR7093-42, and AF24-33c were of acceptable color at all locations. Thirty-one of the 95 varieties had satisfactory french fry color (3.0 or less), but almost half of the varieties tested had unsatisfactory or borderline french fry texture ratings (1.2 or higher).

Complete details of the Maine Cooperative Variety Trials are presented in the 1977 Northeastern Potato Variety Trials. This publication will be available from the Public Information and Central Services, University of Maine; Orono, Maine 04473.

Maine Table 1. Yield and specific gravity of potato varieties grown at Grand Isle, Presque Isle, and Newport, Maine - 1977.

Variety	Grand Isle		Presque Isle		Newport	
	Yield Cwt./A.	Specific Gravity	Yield Cwt./A.	Specific Gravity	Yield Cwt./A.	Specific Gravity
Alaska Red			318	1.073		
Atlantic					372	1.093
Batoche	344	1.067	351	1.077	363	1.088
Bison	226	1.061	228	1.064		
Campbell 11	263	1.076	332	1.083	324	1.091
Campbell 12	338	1.071	457	1.083	341	1.082
Cobbler	291	1.065	300	1.071		
Katahdin	230	1.070	470	1.078		
Kennebec	333	1.064	348	1.070	389	1.076
Monona					299	1.075
Norchip					402	1.082
Penn 71					433	1.074
Russet Burbank	215	1.076	362	1.068		
Shurchip					336	1.073
Snowchip	331	1.068	340	1.074	375	1.078
Superior	291	1.068	304	1.069	241	1.080
Tobique	271	1.075	347	1.078	247	1.079
Wischip					304	1.074
AF11-12c	293	1.066	297	1.073		
AF24-33c	305	1.078	317	1.084	285	1.087
AF25-18c	275	1.081	349	1.086	416	1.076
AF32-8	373	1.065	474	1.068		
AF40-9c	299	1.069	366	1.078	275	1.078
AF41-2	276	1.073	267	1.066	304	1.072
AF84-4	269	1.076	398	1.083	296	1.082
AF173-2	398	1.064	465	1.077		
AF186-2	319	1.088	386	1.087	355	1.094
AF186-5	315	1.071	296	1.076		
AF193-4	253	1.073	427	1.075		
AF197-1	328	1.077	460	1.078		
AF197-7	367	1.070	459	1.090		
AF200-6	347	1.070	416	1.073		
AF201-3	340	1.067	378	1.069		
AF205-9	345	1.071	328	1.071		
AK25	271	1.074	293	1.079	313	1.085
AK28	281	1.085	423	1.085		
AK37-19	318	1.089	309	1.086	367	1.100
B6986-26	245	1.069	289	1.079	370	1.089
B6986-137	234	1.079	240	1.087		
B6987-29					328	1.089
B6987-184	279	1.087	416	1.095	193	1.091
B7008-3	307	1.067	276	1.079		
B7024-6	259	1.075	279	1.080	288	1.083
B7147-8	202	1.082	300	1.072		
B7196-74	353	1.075	320	1.062		

Maine Table 1 - continued

Variety	Grand Isle		Presque Isle		Newport	
	Yield Cwt./A.	Specific Gravity	Yield Cwt./A.	Specific Gravity	Yield Cwt./A.	Specific Gravity
B7583-6	256	1.081	383	1.073		
B7629-1	359	1.074	488	1.070		
B7669-2	249	1.066	374	1.078		
B7684-6	209	1.077	346	1.088		
B7802-2	383	1.066	358	1.071	403	1.077
B7813-5	253	1.073	384	1.071		
B7845-4	426	1.074	567	1.067		
B7845-10	319	1.065	343	1.072	336	1.090
B7845-19	311	1.082	478	1.072	320	1.081
B7845-23	241	1.075	236	1.080		
B7845-29	301	1.075	496	1.067		
B7848-2	261	1.076	413	1.075		
B7859-2	335	1.076	389	1.082	335	1.085
B7863-2	324	1.068	309	1.074		
B7863-5	263	1.066	417	1.071		
B7929-11	314	1.073	322	1.078		
B7957-5	283	1.074	502	1.082		
B8086-3	407	1.078	505	1.074		
B8125-5	289	1.074	456	1.085		
B8148-4	399	1.068	424	1.074		
BR6863-5	256	1.071	255	1.075	353	1.087
BR7090-17	330	1.074	358	1.076	378	1.078
BR7093-5					271	1.076
BR7093-42	311	1.065	287	1.071		
BR7093-48	237	1.063	264	1.067	274	1.073
C7232-6A	265	1.065	159	1.066	201	1.074
C7279-3A	379	1.070	400	1.073		
C72107-13A	366	1.069				
CA02-7	332	1.074	436	1.080	368	1.083
CA46-11					328	1.080
CA55-24	350	1.073	343	1.080		
CC06-12	366	1.073	437	1.079		
CC26-1A	223	1.068	249	1.075		
CC53-8A	402	1.069	628	1.068		
CC54-3A	361	1.076	388	1.084		
CD08-21	277	1.078	384	1.074		
CD08-29	369	1.075	420	1.081		
CD08-30	219	1.076	378	1.085	278	1.085
CD23-1	277	1.075	321	1.077		
CD34-2	293	1.093	432	1.080		
CD130-7R	308	1.085	402	1.083		
CD138-4R	256	1.074	386	1.074		
CD139-9	296	1.075	322	1.082	273	1.087
F67072	343	1.065	306	1.069	342	1.077
F67128			357	1.072		

Maine Table 1 - continued

Variety	Grand Isle		Presque Isle		Newport	
	Yield Cwt./A.	Specific Gravity	Yield Cwt./A.	Specific Gravity	Yield Cwt./A.	Specific Gravity
F68026			274	1.067		
NY-59	345	1.068	425	1.072	375	1.072
W524-5			346	1.089	331	1.091
W564-3	346	1.070	520	1.071		
WC330-1	317	1.075	505	1.070		
47156	199	1.071	322	1.080		
Bayes L.S.D. (0.05)	57	0.005	43	0.004	53	0.007

Maine Table 2. Percentage of yield between 1-7/8 and 4 inches in diameter for varieties grown at Grand Isle, Presque Isle, and Newport, Maine - 1977.

Variety	Grand Isle		Presque Isle		Newport	
	1-7/8 to 4 inches	2-1/2 to 4 inches	1-7/8 to 4 inches	2-1/2 to 4 inches	1-7/8 to 4 inches	2-1/2 to 4 inches
Alaska Red			92.3	29.2		
Atlantic					96.8	73.7
Batoche	96.2	62.3	97.2	62.0	97.4	68.3
Bison	94.1	35.1	93.1	39.1		
Campbell 11	98.4	74.4	97.7	70.9	96.4	76.9
Campbell 12	95.6	64.6	96.6	66.3	95.2	62.7
Cobbler	95.2	42.3	93.0	40.1		
Katahdin	93.2	59.0	96.6	77.7		
Kennebec	97.7	70.1	97.8	72.5	94.8	77.4
Monona					96.2	65.0
Norchip					95.9	52.1
Penn 71					90.4	80.1
Russet Burbank	75.0% 4 - 10 oz.		65.7% 4 - 10 oz.			
Shurchip					97.0	69.2
Snowchip	94.8	48.1	95.0	54.5	95.8	61.6
Superior	95.4	53.9	97.0	53.4	96.8	62.1
Tobique	95.9	52.1	96.8	63.2	97.2	69.6
Wischip					92.7	35.1
AF11-12c	93.8	41.6	92.2	34.5		
AF24-33c	96.8	49.6	94.9	42.8	94.5	52.0
AF25-18c	92.6	39.2	92.8	39.9	96.3	56.7
AF32-8	95.9	54.1	96.3	48.4		
AF40-9c	97.7	65.6	98.0	66.3	97.3	70.5
AF41-2	94.6	36.2	93.7	42.7	77.0	50.1
AF84-4	96.0	59.4	95.4	76.4	97.1	75.6
AF173-2	97.8	59.6	98.5	60.3		
AF186-2	95.7	32.8	96.3	27.7	93.8	36.1
AF186-5	92.9	28.2	96.1	40.9		
AF193-4	94.5	53.2	96.7	62.8		
AF197-1	94.6	58.7	96.2	68.8		
AF197-7	95.5	65.0	95.0	64.2		
AF200-6	97.7	32.8	96.8	29.0		
AF201-3	96.7	69.9	97.6	71.9		
AF205-9	93.9	54.1	95.5	55.9		
AK25	90.0	27.3	92.2	35.4	93.3	49.5
AK28	97.3	53.1	96.4	53.5		
AK37-19	94.3	43.9	95.5	45.8	95.3	60.3
B6986-26	95.2	60.1	94.1	53.4	96.3	68.3
B6986-137	90.7	28.7	95.8	52.2	94.1	53.7
B6987-29					97.5	76.3
B6987-184	95.2	59.9	96.8	60.7	95.1	57.7
B7008-3	95.3	46.2	95.2	61.5		
B7024-6	94.9	34.5	97.6	53.1	96.5	61.2
B7147-8	78.5% 4 - 10 oz.		72.7% 4 - 10 oz.			
B7196-74	69.9% 4 - 10 oz.		59.4% 4 - 10 oz.			

Maine Table 2 - continued

Variety	Grand Isle		Presque Isle		Newport	
	1-7/8 to 4 inches	2-1/2 to 4 inches	1-7/8 to 4 inches	2-1/2 to 4 inches	1-7/8 to 4 inches	2-1/2 to 4 inches
B7583-6	77.7% 4 - 10 oz.		61.9% 4 - 10 oz.			
B7629-1	98.2	81.4	95.1	80.9		
B7669-2	95.3	51.5	95.2	56.4		
B7684-6	95.7	54.6	97.9	68.8		
B7802-2	96.6	62.3	98.5	63.3	96.9	72.1
B7813-5	78.1% 4 - 10 oz.		68.2% 4 - 10 oz.			
B7845-4	96.0	44.2	95.9	50.7		
B7845-10	89.0	19.1	56.1% 4 - 10 oz.		94.4	44.1
B7845-19	94.4	48.7	93.4	50.5	94.8	53.6
B7845-23	94.7	23.0	94.6	27.6		
B7845-29	69.3% 4 - 10 oz.		64.0% 4 - 10 oz.			
B7848-2	92.2	45.1	94.4	47.3		
B7859-2	94.1	30.3	93.7	31.6	93.5	39.2
B7863-2	97.5	60.1	93.8	38.0		
B7863-5	95.6	55.5	93.8	65.6		
B7929-11	93.6	26.0	94.8	29.5		
B7957-5	91.2	36.0	94.6	39.1		
B8086-3	95.9	69.4	96.2	69.1		
B8125-5	94.1	47.4	96.3	59.8		
B8148-4	97.6	67.3	95.7	57.1		
BR6863-5	90.3	24.9	91.9	35.0	95.6	61.2
BR7090-17	97.2	58.6	95.2	50.0	95.0	60.2
BR7093-5					95.7	77.9
BR7093-42	97.2	60.0	97.4	60.2		
BR7093-48	96.2	69.1	95.5	79.3	97.4	81.2
C7232-6A	93.2	48.8	86.8	27.5	77.2	43.7
C7279-3A	97.7	61.3	97.5	49.4		
C72107-13A	96.7	53.3				
CA02-7	96.5	68.3	97.2	70.4	96.0	71.6
CA46-11					95.6	68.5
CA55-24	98.0	63.8	97.4	49.5		
CC06-12	95.2	53.3	95.8	68.0		
CC26-1A	94.6	26.4	93.9	32.4		
CC53-8A	94.9	57.5	52.9% 4 - 10 oz.			
CC54-3A	96.5	55.3	95.8	44.8		
CD08-21	75.8% 4 - 10 oz.		57.4% 4 - 10 oz.			
CD08-29	97.6	62.0	96.6	63.3		
CD08-30	95.4	61.8	96.2	63.9	96.3	65.9
CD23-1	97.1	53.6	96.2	54.5		
CD34-2	73.3% 4 - 10 oz.		56.0% 4 - 10 oz.			
CD130-7R	95.5	59.2	94.2	56.4		
CD138-4R	77.3% 4 - 10 oz.		64.1% 4 - 10 oz.			
CD139-9	96.9	47.2	96.2	51.9	95.5	54.7
F67072	97.9	68.4	97.0	72.6	95.5	71.4
F67128			96.6	57.9		

Maine Table 2 - continued

Variety	Grand Isle		Presque Isle		Newport	
	1-7/8 to 4 inches	2-1/2 to 4 inches	1-7/8 to 4 inches	2-1/2 to 4 inches	1-7/8 to 4 inches	2-1/2 to 4 inches
F68026			62.0% 4 - 10 oz.			
NY-59	96.7	70.0	97.7	76.9	97.5	77.6
W524-5	97.7	56.8	97.2	48.7	96.1	62.2
W564-3	96.3	42.9	67.8% 4 - 10 oz.			
WC330-1	68.1% 4 - 10 oz.		55.2% 4 - 10 oz.			
47156	94.4	35.0	95.7	38.2		

Maine Table 3. Chip color, french fry color and texture indices for potato varieties grown at Presque Isle, Grand Isle, and Newport, Maine - 1977.

Variety	Presque Isle			Grand Isle	Newport
	Chip Color[1]	French fry Color[2]	French fry Texture[3]	Chip Color[1]	Chip Color[1]
Alaska Red	10.0	4.8	1.7		
Atlantic					7.8
Batoche	9.3	4.8	2.9	8.6	9.2
Bison	9.9	4.1	1.1	8.0	
Campbell 11	6.2	1.8	1.7	6.5	6.5
Campbell 12	9.7	3.5	1.5	9.6	9.5
Cobbler	10.0	4.7	1.1	7.9	
Katahdin	9.2	3.1	1.4	9.6	
Kennebec	7.9	3.1	1.1	8.1	7.7
Monona					7.0
Norchip					7.5
Penn 71					8.0
Russet Burbank	8.5	2.9	1.1	9.3	
Shurchip					8.3
Snowchip	7.9	3.5	1.1	7.4	7.8
Superior	10.0	4.5	1.4	7.8	8.2
Tobique	8.2	3.1	1.1	7.2	7.3
Wischip					7.0
AF11-12c	9.6	4.1	1.8	8.9	
AF24-33c	7.3	2.2	1.1	6.7	7.1
AF25-18c	7.4	2.2	1.1	7.7	8.1
AF32-8	8.4	3.4	1.3	8.5	
AF40-9c	7.0	2.3	1.1	6.5	7.5
AF41-2	9.6	3.6	1.3	7.4	8.8
AF84-4	7.7	2.1	1.1	8.9	7.5
AF173-2	7.6	3.1	2.1	8.0	
AF186-2	6.6	1.5	1.2	5.8	6.0
AF186-5	7.6	2.5	1.4	7.0	
AF193-4	10.0	3.8	2.5	7.0	
AF197-1	9.4	3.3	1.3	9.9	
AF197-7	9.2	3.4	1.2	9.2	
AF200-6	8.4	3.3	1.7	7.8	
AF201-3	8.7	4.1	1.5	7.7	
AF205-9	8.1	2.7	1.1	7.5	
AK25	9.4	4.0	1.1	8.2	9.0
AK28	8.5	2.7	1.2	6.3	
AK37-19	8.9	3.5	1.1	8.4	8.2
B6986-26	8.6	3.1	1.2	6.9	7.6
B6986-137	7.1	1.8	1.6	5.4	6.5
B6987-29					7.4
B6987-184	8.0	1.8	1.0	8.1	7.9
B7008-3	9.5	4.4	1.1	8.7	
B7024-6	8.5	3.3	1.1	6.9	7.7
B7147-8	8.5	2.3	1.7	9.3	

Maine Table 3 - continued

Variety	Presque Isle			Grand Isle	Newport
	Chip Color[1]	French fry Color[2]	French fry Texture[3]	Chip Color[1]	Chip Color[1]
B7196-74	9.4	4.2	1.4	9.3	
B7583-6	9.0	3.4	1.2	9.6	
B7629-1	9.6	3.8	1.1	10.0	
B7669-2	8.7	3.0	1.7	8.1	
B7684-6	7.6	2.4	1.8	8.1	
B7802-2	8.8	3.9	1.1	7.8	7.9
B7813-5	8.9	2.8	1.2	9.5	
B7845-4	9.8	3.9	1.5	10.0	
B7845-10	8.2	3.3	1.1	7.9	8.4
B7845-19	9.4	3.3	1.6	8.9	8.2
B7845-23	8.9	3.2	1.1	8.6	
B7845-29	9.0	3.1	1.3	9.2	
B7848-2	9.6	3.8	1.8	9.8	
B7859-2	7.3	2.4	1.6	6.9	6.7
B7863-2	8.6	3.2	2.2	7.6	
B7863-5	9.2	4.0	1.4	10.0	
B7929-11	8.2	3.2	1.4	8.0	
B7957-5	7.9	2.3	1.5	8.5	
B8086-3	9.0	3.3	1.1	9.1	
B8125-5	8.6	3.3	1.4	10.0	
B8148-4	8.6	3.1	1.0	8.0	
BR6863-5	8.2	2.5	1.3	6.1	6.5
BR7090-17	7.1	2.3	1.1	5.9	6.8
BR7093-5					7.8
BR7093-42	6.4	2.6	1.5	7.0	
BR7093-48	8.3	3.1	1.4	7.3	8.2
C7232-6A	9.6	4.3	1.6	5.7	8.7
C7279-3A	8.4	3.0	1.9	7.2	
C72107-13A				7.2	
CA02-7	9.1	4.0	2.0	9.2	8.7
CA46-11					7.5
CA55-24	7.6	2.1	1.0	6.0	
CC06-12	8.2	3.0	1.2	9.2	
CC26-1A	9.1	4.5	1.5	7.8	
CC53-8A	10.0	4.1	1.2	9.6	
CC54-3A	7.7	2.4	1.3	6.7	
CD08-21	8.5	2.6	1.1	8.7	
CD08-29	8.9	3.3	1.1	7.7	
CD08-30	8.2	2.7	1.1	8.1	8.1
CD23-1	7.2	2.7	1.0	6.2	
CD34-2	8.7	2.5	1.3	9.0	
CD130-7R	7.9	2.5	1.2	8.0	
CD138-4R	9.3	3.2	1.1	9.3	
CD139-9	7.4	2.4	1.3	7.2	8.6
F67072	10.0	4.9	2.1	6.6	8.4
F67128	9.9	5.0	1.2		

Maine Table 3 - continued

Variety	Presque Isle			Grand Isle	Newport
	Chip Color[1]	French fry Color[2]	French fry Texture[3]	Chip Color[1]	Chip Color[1]
F68026	9.9	5.0	1.8		
NY-59	10.0	4.4	1.6	10.0	9.0
W524-5	8.7	3.7	1.1	7.7	8.2
W564-3	10.0	3.7	1.1	10.0	
WC330-1	9.2	3.3	1.5	9.0	
47156	9.3	3.7	1.3	8.6	
Bayes L.S.D. (0.05)	0.6	0.5	0.5	0.9	0.8

[1]Chips with lower indices are lighter in color. (PCII color reference chart 1206-U).

[2]French fries with lower indices are lighter in color. (USDA color standards).

[3]Lower texture indices indicate a mealier texture.

Maine Table 4. Pertinent information about the Maine Cooperative Potato Variety Trials - 1977.

Location and Maturity Season	Date Planted	Date Killed	Date Harvested	Fertilization	Seedpiece Spacing
Presque Isle					
Early & med. early varieties	May 20	August 18	August 30	135-135-135	1/
Medium varieties	May 20	August 28	September 8	135-135-135	1/
Medium late varieties	May 20	August 31	September 17	135-135-135	1/
Late varieties	May 20	September 7	September 28	135-135-135	1/
Russet & Long type varieties	May 20	September 17	October 6	135-135-135	2/
Grand Isle					
Early & med. early varieties	May 24	August 22	August 31	150-150-150	1/
Medium varieties	May 24	September 1	September 13	150-150-150	1/
Medium late varieties	May 24	September 6	September 20	150-150-150	1/
Late varieties	May 24	September 14	October 7	150-150-150	1/
Russet & Long type varieties	May 24	September 21	October 7	150-150-150	2/
Newport					
All varieties	May 26	September 6	September 19	140-140-140	1/

1/ Seedpieces of all varieties spaced 8 inches apart.

2/ Seedpieces of Russet Burbank spaced 16 inches apart.
Seedpieces of B7147-8 and B7196-74 spaced 12 inches apart.
Seedpieces of all other varieties spaced 9 inches apart.

MAINE - 1977

Alvin F. Reeves and Robert B. Long

Potato Breeding

Continuing Program. The continuing program to select early maturing potato varieties adapted to Maine was maintained as in past years. Thirty-four crosses were made in the greenhouse, resulting in the formation of 122 fruits containing 4,446 seeds. Prior to crossing, all parent plants were tested on tomato plants for presence of spindle tuber virus; none was found, although all check tomato plants did show the disease symptoms.

Seeds from 46 family lines were planted in the greenhouse in June. From the resulting 9,302 seedlings, 7,113 tubers were harvested. A total of 1,340 selections were saved from the 39,000 single hills grown on the Gartley farm in Presque Isle. Selection in the 12-hill plots was based on maturity, tuber shape, yield, and appearance; 147 selections were made from the 1,456 plots planted.

Yield Test Data. The data presented in the tables are from yield tests of 124 advanced selections. Each selection comprised four replications of 20 hills each. Fertilizer in the form of 14-14-14 was applied at the rate of 125 pounds nitrogen per acre. Twenty-two selections yielded better than standard check varieties and 48 had higher specific gravity. Eight were better on both counts.

Disease Tests. Selections from the second and third years of the program were tested for greening, virus X, late blight, early blight, common scab, acid scab, net necrosis, and leafroll resistance. Some degree of resistance was found in 52/273 tested for greening; 12/106 for virus X; 29/154 for acid scab; 37/138 for late blight; 16/92 for early blight; 44/84 for common scab; and 64/84 for net necrosis. The leafroll test gave inconclusive results this year. Notable clones in these tests are AF 92-3 which combines resistance to late blight, early blight, and acid scab; AF 295-10, resistant to late blight and acid scab; C 7358-26a, resistant to early blight and acid scab; and three clones resistant to early blight and golden nematode.

Transplant Experiment. In an effort to speed up the breeding program by one year, seedlings grown from true seed were transplanted from the greenhouse to field single hill plots. Both in 1976 and again in 1977, the transplanted seedlings did not grow fast enough to allow for efficient selection at harvest time. Fourty-six were retained in 1976 and planted in 12-hill plots in 1977. Only two of these proved worthy of further testing. Seventy-one of 204 transplants in 1977 were saved for growth in 12-hill plots in 1978. However, in anticipation of discarding most of these as in the previous year's experience, the transplanting experiment will be discontinued.

Four-hill Plots. As a test of the effectiveness of single hill selection, a four-hill plot was established in which will be grown a small number of the unselected single hill clones from the previous year. These will be selected on the same basis as the 12-hill clones and followed through a few more years

of testing. The proportion of these retained will be a measure of the number of valuable clones left behind in the extreme selection pressure practiced at the single hill stage.

Leafroll Plantback. Aphids and leafroll infected plants were detected in the greenhouse (room 10) in 1975. In 1976, a similar outbreak occurred in the plastic greenhouse. In order to test the effectiveness of rogueing these leafroll plants both in the greenhouse and in field single hill plots, tubers from suspected leafroll plants were saved in 1976 and replanted in 1977. From 68 replants originating from the plastic greenhouse, 47 emerged and only one (2%) showed leafroll; from 54 replants originating from single hill field plantings and from room five in 1975, 12 (22%) had leafroll; and from the room ten material (also single hill field plantings in 1976), 88 or 94 (94%) had leafroll. Thus, most of the material removed from the greenhouse is physiological leafroll, rather than viral; furthermore, single hill rogueing will also be confounded by physiological leafroll where there is not a large amount of viral leafroll present to help make the distinction.

Introductions. Nine European varieties and 33 diploid clones were selected from material obtained from the IR-1 project in Wisconsin. These will be incorporated in the breeding program to give a broader base of germplasm and to provide another source of earlier maturing clones.

Eye Number. A study of the variation in eye number from clone to clone and its effect on blind seed formation with mechanical seed cutters was carried out in cooperation with Jim Hunter. Clones with low eye numbers gave a four- to five-fold increase in percent blind seed when compared with high eye number clones. It will be important for new varieties to be at least as well eyed as the standards they are to complement and compete with.

Potential Varietal Releases. Clone AF 41-2 (medium-early, round, dark cream colored) showed severe damage to hervicides applied postemergence in 1977. Further testing and seed increase will be required. Selections AF 193-4 (mid-season, oblong russet) and AF 186-2 (oblong, late sizing white with resistance to golden nematode) will be tested in half acre trials in 1978. Lines AF 186-5 (similar to its sibling) and CC 26-1a (medium-early, round white) are also under consideration.

Maine Table 9. Summary of early maturity yield test (90 days) - Silvers Farm, Presque Isle - 1977.

Pedigree	Cwt/A US 1	% US1	Specific Gravity	Rating[1]	Color[2]	Shape[3]	Maturity	Fry Color[5] 50°[4]	Fry Texture[6] 50°	Fry Color 40°[7]	Fry Texture 40°	Boiling Test[8] Color	Texture	Flavor
AF 41- 2	262	94	1.075	5	B	O	ME	6.3	1.4	7.5	1.8	3	2.5	2.5
AF 76- 7	382	97	73	2-	W	RO	ME	7.6	1.6	8.0	1.3	2.5	2.5	3
AF 189- 2	251	98	66	5	R	RO	M	7.2	1.1	8.5	1.0	2.5	3	3
AF 192- 3	273	94	90	3	W	RO	ME	6.8	1.0	7.0	1.0	3	3	3
AF 238-7c	334	95	79	3+	C	RO	M	5.8	2.0	7.6	1.5	1.5	3	3.5
AF 269- 5	388	97	84	3-	B	O	M	6.2	1.1	7.6	1.2	3	3	3
AF 270- 6	298	96	67	5	R	O	M	7.2	1.1	7.9	1.2	3.5	2.5	3
AF 273-11	296	95	82	4	W	O	ME	6.6	1.8	8.0	1.0	2.5	3	3
AF 287- 4	307	97	85	2	C	R	ME	5.8	1.4	6.8	1.0	2.5	3	3.5
AF 290- 5	267	97	85	4+	C	R	M	5.9	2.0	7.6	1.0	3.5	3	3
AF 291-11	274	98	77	3+	W	O	M	6.0	2.5	7.1	2.1	0.5	2.5	3
-14	326	97	71	4	C	O	M	6.2	1.5	8.0	1.2	2	3	3
AF 300-10	348	96	76	4+	C	R	ME	7.2	2.6	8.3	1.9	3	2	3.5
-21	311	98	74	2	W	O	M	6.6	1.0	8.5	1.0	1.5	2.5	2
C 7232-6a	301	96	78	3	W	O	M	6.0	2.3	6.0	1.9	2.5	3	3
C 7412-3a	317	96	72	2+	W	RO	ME	6.0	2.5	7.9	1.5	4	3	2.5
C 7424-3a	322	95	68	3	C	R	ME	6.9	1.6	7.3	1.5	1.5	3	3
C 7435-1a	-	--	76	2	C	O	M	7.2	1.3	8.2	1.0	2.5	3	3
C 7461-1a	347	96	77	4-	B	R	M	8.6	1.8	9.5	1.4	3.5	3	3
C74129-3a	345	97	66	3-	C	RO	ME	6.6	1.1	8.6	1.0	3	3	3
C74132-1a	320	97	81	4	C	RO	M	5.5	1.7	7.7	2.2	3.5	3	3
C74135-3a	343	96	66	3+	W	R	ME	7.6	1.2	7.9	1.3	5	3	3
C74137-2a	258	92	88	3+	W	R	M	6.6	1.8	8.8	1.0	2.5	3	3
W 654-3a	283	97	79	5	R	RO	M	6.8	1.0	9.3	1.0	3	3	3
W 678-9a	363	98	78	4-	W	RO	ME	7.1	1.9	7.8	1.5	2.5	3	3
Superior	363	99	81	3	C	RO	M	6.4	1.6	7.4	1.6	3	3	3
Bayes - CD	36.9	1.1	2.2											

1/ Tuber appearance. 1 = poor to 5 = excellent.
2/ B = buff, W = white, C = cream, R = russet, Pu = purple, Pi = pink.
3/ O = oblong, R = round, L = long.
4/ Samples held at 50° C until cooking in early December.
5/ Scale = 1 to 10. Greater than 7 = too dark.
6/ 1 = mealy to 3 = soggy.
7/ Samples stored two month at 40° F, then reconditioned at 70° F for 3 weeks.
8/ Tuber plugs were boiled in water for 10 minutes, rinsed in tap water and examined one half hour later. Ratings from 0 = very poor to 5 - excellent.

Maine Table 10.a. Summary of medium maturity yield test # 1 (104 days) - Silvers Farm Presque Isle - 1977.

Pedigree	Cwt/A US 1	% US1	Specific Gravity	Rating	Color	Shape	Maturity	Fry Color 50°	Fry Texture 50°	Fry Color 40°	Fry Texture 40°	Boiling Test Color	Boiling Test Texture	Boiling Test Flavor
AF 183- 3	345	96	1.077	4	R	R	M	7.2	1.1	8.3	1.3	3	3	3
AF 200- 6	356	98	74	3+	W	RO	M	6.7	2.1	7.4	1.2	2.5	3	3
AF 205- 9	359	96	85	3+	WC	RO	ML	5.1	1.2	5.4	1.0	2.5	2.5	3
AF 214- 2	410	98	82	3	W	R	M	6.8	1.0	8.0	1.0	2.5	3	3
AF 221- 1	355	96	79	3+	C	L	ML	5.8	1.3	7.2	1.5	2.5	1.5	3
AF 223- 1	410	98	83	3+	LR	RO	M	5.9	1.5	5.8	1.1	3	2.5	3
AF 238-21	447	97	81	3+	W	R	M	5.6	1.4	7.4	1.3	3	3	3
-29	---	--	--	--	-	-	M	---	---	---	---	-	-	-
-66	429	98	79	2	WC	O	M	5.2	2.1	7.8	1.9	2	2	3
AF 239- 5	---	--	83	2	W	O	ME	5.1	1.5	7.3	2.7	3	3	3
AF 240- 4	375	97	91	1	WC	O	M	5.1	1.9	8.0	1.4	3	3	3
AF 261-10	352	96	89	3+	R	RO	M	6.1	1.3	7.5	1.2	3	2.5	3
AF 262- 1	334	93	90	--	WC	R	M	6.7	1.2	8.0	1.0	3	3	3
- 7	346	96	89	4+	C	RO	M	5.1	1.6	6.2	1.8	2.5	2.5	3
AF 263- 2	391	97	78	3	W	R	ML	7.4	1.5	8.8	1.7	3	3	3
AF 270- 6	373	97	78	4	R	RO	M	6.8	1.0	7.4	1.0	3	2.5	3
AF 279- 9	334	97	88	2+	C	OL	M	5.9	1.0	7.1	1.0	3	2	3
AF 287- 7	354	98	82	3	WC	OL	ME	5.5	1.6	7.0	1.2	3	2.5	3
AF 288- 1	362	95	99	3	C	L	M	5.4	1.2	6.0	1.3	3	3	3
AF 290- 1	323	97	96	4+	B	R	M	6.0	1.2	7.2	1.0	3	3	3
AF 291-34	444	97	83	4+	WC	O	ME	5.9	1.9	7.5	1.9	2.5	2.5	2
Katahdin	360	99	80	3+	C	R	L	6.8	1.9	7.5	1.7	3	2.5	3
Kennebec	416	98	82	3	WC	RO	L	6.0	1.0	7.2	1.0	3	3	3
R.Burbank	294	87	89	3	R	L	ML	6.8	1.1	8.0	1.0	1.5	3	3
Bayes CD (0.10)	35.9	1.8	3.6											

Maine Table 10.b. Summary of medium maturity yield test # 2 (104 days) - Silvers Farm, Presque Isle - 1977.

Pedigree	Cwt/A US 1	% US1	Specific Gravity	Rating	Color	Shape	Maturity	Fry Color 50°	Fry Texture 50°	Fry Color 40°	Fry Texture 40°	Boiling Test Color	Boiling Test Texture	Boiling Test Flavor
AF 291- 67	382	98	1.087	3+	C	O	M	6.6	1.2	6.7	1.5	1.5	2.5	1.5
- 68	352	97	84	4	W	RO	M	5.2	1.0	4.7	1.8	1.5	3	3
AF 295- 10	350	98	72	3+	R	RO	M	7.7	2.2	8.0	2.5	3	2	3
AF 299- 7	435	98	79	3+	C	RO	M	6.3	1.2	6.5	1.6	1.5	3	3
- 12	390	99	76	4	C	RO	M	7.0	1.0	7.4	1.0	4	3	3
C 7296- 5	424	97	82	3+	W	RO	M	8.3	1.0	6.9	1.8	3	3	3
C 7401- 3a	422	99	73	3+	W	RO	M	9.2	1.7	8.0	2.1	2.5	2.5	3
C 7408- 2a	271	88	80	3	R	RO	M	9.3	1.8	7.9	1.6	3	2	4
C 7415- 3a	399	97	82	3+	W	R	M	9.5	1.0	8.5	1.0	4	3	2
C 7416- 3a	386	96	73	3	C	R	M	7.0	1.2	7.3	1.0	3	3	3
C 7419- 1a	424	99	89	4	W	O	M	4.3	1.1	5.9	1.0	3	3.5	3
C 7442- 3a	345	97	94	3+	C	RO	M	6.0	1.1	6.9	1.3	3.5	3.5	2.5
C 7462- 3a	379	99	86	4+	WC	RO	M	6.3	1.2	7.1	1.6	4	4	3
C74127- 9a	377	99	86	2	C	RO	M	5.0	1.1	7.5	1.0	0	4	3
C74140- 2a	410	98	75	3	W	O	M	7.9	1.0	6.8	2.0	2.5	3	3
C74141- 3a	388	97	80	3+	W	R	M	7.8	1.0	7.1	1.6	5	3	2.5
ND9478- 5a	418	98	76	3	C	RO	M	7.6	1.4	6.7	1.7	3	3	3
ND9560- 1a	384	96	87	3	C	R	ME	7.4	1.0	5.2	1.7	3	2	3.5
W 626-15a	305	98	85	3+	W	R	M	6.0	1.2	8.0	1.6	3	3.5	2
W 652-12a	398	98	88	3+	C	RO	M	6.0	1.1	8.4	1.8	3	3	3
W 676- 4a	318	98	86	3-	C	OL	M	5.7	1.1	6.8	1.4	2	3	3
W 686- 2a	377	98	86	3	W	O	ML	5.5	1.1	8.5	2.4	2.5	3	3
Katahdin	372	99	78	3	W	RO	ML	8.1	1.9	8.5	1.8	3	3	3
Kennebec	448	98	80	3	W	RO	L	6.9	1.0	6.9	1.2	3.5	2.5	3
Bayes CD (0.10)	30.3	1.1	2.9											

Maine Table 11. Summary of early-medium yield test (100 days) - Grand Isle - 1977.

Pedigree	Cwt/A US 1	% US1	Specific Gravity	Rating	Color	Shape	Maturity	Fry Color 50°	Fry Texture 50°	Fry Color 40°	Fry Texture 40°
AF 186- 2	341	96	1.080	3+	W	RO	M	3.5	1.4	3.6	1.3
- 5	312	96	74	3	W	RO	M	4.7	1.5	5.8	1.2
AF 193- 4	256	97	69	3+	R	O	ME	4.0	1.9	4.3	1.6
AF 222- 1	293	93	76	3	W	RO	M	4.8	1.0	6.2	1.2
AF 235- 4	302	97	68	3-	W	RO	M	5.2	2.2	5.9	1.0
AF 291- 11	245	97	75	3	C	RO	ME	5.1	1.8	4.5	1.5
- 14	238	94	67	2	C	RO	ME	5.0	1.7	7.0	1.3
C 7232- 6a	343	97	73	3+	W	RO	M	4.3	1.4	4.2	1.2
CC 26- 1a	275	97	73	3	W	R	M	5.4	1.2	4.2	1.2
CD 73-21a	318	95	62	4	W	R	ME	6.6	1.2	7.5	1.0
CD 121- 1	265	99	76	3-	W	O	M	4.6	1.7	4.6	1.3
ND9591- 2a	309	94	65	3+	W	R	M	6.2	2.8	6.7	2.4
W 564- 3a	358	97	63	4+	R	OL	M	7.0	1.4	6.9	1.5
Superior	333	98	70	3-	W	R	M	6.0	1.1	6.2	2.4
Wauseon	305	97	66	3	W	R	M	5.6	1.4	7.3	1.0
Katahdin	240	97	61	3-	W	R	ML	5.5	1.5	7.1	2.1
Bayes CD (0.10)	41.9	1.6	2.9								

Maine Table 12. Summary of medium-late yield test (111 days) - Grand Isle - 1977.

Pedigree	Cwt/A US 1	% US1	Specific Gravity	Rating	Color	Shape	Maturity	Fry Color 50°	Fry Texture 50°	Fry Color 40°	Fry Texture 40°
A 70114- 1	357	96	1.078	3+	R	R	M	6.7	1.9	6.0	1.6
AF 84- 4	272	98	78	3+	W	R	ML	6.7	1.6	6.3	1.0
AF 92- 3	325	97	68	3	W	R	M	7.0	1.8	9.1	2.1
AF 215- 1	314	98	65	3	R	R	M	5.5	2.5	6.0	2.0
AF 228- 1	266	99	71	2	R	RO	L	6.9	2.3	6.6	1.7
AF 236- 1	376	97	75	3+	C	RO	M	3.1	2.6	4.1	2.8
AF 237- 8	401	99	71	3-	W	RO	M	7.0	1.8	7.2	1.5
AF 291- 67	317	97	73	4	W	RO	M	7.2	2.7	7.0	1.0
C 7353- 1a	374	98	71	3	PU	R	ML	5.4	2.2	4.9	1.4
C 7354- 3a	---	--	75	-	W	-	ML	8.0	1.9	8.7	1.9
C 7356-13a	383	98	80	2+	W	RO	ML	8.3	1.2	9.6	1.0
C 7358- 5a	396	96	77	3	C	R	M	8.1	1.7	8.5	1.4
- 7a	408	98	76	3+	W	R	M	6.4	1.9	6.9	1.7
-14a	395	97	78	3+	W	RO	M	5.3	1.7	8.0	1.7
-26a	394	98	73	4	R	RO	M	6.9	1.9	7.8	1.2
C 7361-16a	---	--	76	3+	W	O	M	7.3	1.8	8.8	1.5
C 7372- 3a	362	95	70	3+	W	R	M	7.3	2.5	7.0	2.1
C 7395- 8a	364	98	78	3	C	RO	M	7.0	2.7	6.6	1.3
C 73107- 4a	252	95	75	3-	W	R	M	8.6	1.9	9.5	2.1
C 73121- 1a	386	97	77	4	PI	OB	M	6.9	2.4	7.2	1.4
C 73132- 4a	459	99	69	3	W	O	M	6.1	1.9	8.3	1.6
CC 53- 8a	428	96	67	4+	W	RO	M	9.3	1.4	9.6	1.1
CC 54- 3a	252	95	78	3+	W	R	ML	5.6	2.0	6.5	1.4
CD 11- 5a	373	98	71	3+	W	RO	L	7.8	2.3	7.4	1.0
CD 13- 2a	334	98	78	3+	R	OL	M	7.6	2.2	7.6	1.1
CD 124-12a	305	97	69	4+	R	O	M	10.0	1.6	10.0	1.8
W 524- 5a	329	98	86	4	R	RO	M	7.4	2.4	8.3	1.5
Kennebec	362	97	71	2	W	RO	ML	7.3	2.1	6.9	1.1
Bayes CD (0.10)	69.4	1.5	3.1								

Maine Table 13. Summary of New Jersey yield test (125 days) - 1977.

Pedigree	Cwt/A US 1	% US1	Specific Gravity	Rating	Color	Chip Color 50°	Fry Color 40°	Fry Texture 40°
AF 41- 17	383	87	1.071	3+	B		7.6	2.1
AF 192- 3	282	80	74	3	B		7.4	1.0
AF 201- 25	378	88	70	3+	B		6.4	2.2
AF 205- 9	342	79	79	3+	B		4.4	1.4
AF 230- 7	159	53	68	3	W		6.0	2.4
- 11	307	84	67	3+	W		8.4	2.2
AF 238- 21	376	91	72	4	B		7.8	2.4
- 66	323	79	71	3+	B		7.8	1.7
C72107-13a	367	88	67	3+			7.9	1.1
-15a	246	83	63	4			8.6	2.1
C72111- 5a	331	80	75	4			7.2	1.6
ND9466- 2a	268	88	60	3			7.2	1.2
ND9591- 2a	259	67	67	3	B		9.8	3
W 530- 3a	339	90	77	3	B		7.0	1.1
W 564- 3a	301	76	65	3	R		7.3	1.6
W 591- 1a	315	85	77	3+	B		7.4	1.4
CC 26- 1a	357		75	4		5.6		
CC 53- 8a	316		64	3		8.5		
B 6987- 29	396		74	3		6.3		
Wisc 623	292		74	3		7.2		
Wisc 718	378		71	3+		6.8		
Superior	344	87	68	3		7.2	5.8	2.0
Katahdin	316	85	59	3+		8.0	7.3	1.6
Kennebec	369	85	71	3+		7.0	5.4	1.6
Bayes CD (0.10)	37.7	4.2	3.6					

MINNESOTA

Florian Lauer, Richard Wenkel, and Sharon Desborough

Minnesota Potato Breeding Program

Replicated Yield Trials. Yield trials were conducted at Grand Forks and Crookston in the RRV, Becker on the irrigated sands, and Anoka on the peat soils. They were planted in 20 hill plots and replicated twice. Eleven varieties and 18 advanced selections were included in these trials in the RRV at Grand Forks and Crookston (Table 1). Table 2 gives the results at Becker on the irrigated sands.

Seven of the 18 selections were retained for further testing. These are listed below:

MN4536 Red (ND4524-7 x ND4620-1). Early, blocky, low solids, high yield, does not chip. Has good cooking quality. Stock has been released to growers.

MN7973 White (Neb 16.55-1 x 1106.64-1). Medium maturity, blocky to long, intermediate solids, russets in some locations, high yield, marginal chipper, french fries. Stock has been released to growers.

MN8224 White (5.63-5 x 2911.69-11). Medium late, round, high solids, high yield, chips. Stock has been released to growers.

MN8264 Red (305.63-1 x 119.63-11). Medium maturity, blocky, low solids, high yield, does not chip.

MN8289 RUS (305.64-9 x 2912.69-4). Medium late maturity, long, good russeting, high solids, intermediate yield, chips, french fries. Stock has been released to growers.

MN8586 RUS (321.64-11 x 305.64-10). Medium maturity, blocky, good russeting, high solids, intermediate yield, chips. Stock has been released to growers.

MN8709 White (2911.69-3 x 502.64-6). Medium maturity, round, high solids, intermediate yield, chips.

Two new varieties were also included in these trials in the RRV. Oneida, a chipping variety released by Wisconsin, was similar to Norchip. It had a better tuber type rating and higher specific gravity but, also, more external defects. Butte, a long russet released by Idaho, appeared to be too late. It was flowering at harvest time in these trials.

Chipping from 43° F Storage. This work continued in cooperation with the Red River Valley Potato Processing Laboratory. A total of 224 seedlings with cold chipping parentage selected for the first time at Crookston were tested and 80 had Agtron values of 35 or more. A value of 35 or more is considered necessary for satisfactory chips. The highest value observed in the seedling selections was 50. There were also 128 older selections grown at Grand Forks and 21 had Agtron values of 35 or more. The most advanced selections with

satisfactory Agtron values when chipped from 43° F were MN8224, MN8586, and MN8709 (Tables 1-3). The Norchip check also chipped satisfactorily in this test.

Resistance to Verticillium Wilt. In cooperation with Howard Bissonnette of Plant Pathology a screening was made of new and advanced selections in the breeding program. The test plot was located at the Ray Vavra farm near Cambridge, Minnesota. About 450 selections were tested. Six hills were planted of each selection. In addition to the Verticillium wilt - nematode complex, an epiphytotic of early blight occurred as well.

A total of 39 selections seemed to have some resistance on the basis of foliar reaction. At harvest, 10 tubers of each selection with apparent resistance were cut to observe tuber infection. Tuber infection ranged from those with no observable tuber infection to those where all 10 tubers were infected. Twenty-two of the 39 selections had somewhat satisfactory maturity and tuber characteristics. If these selections are in fact resistant to Verticillium wilt, they probably derive their resistance from one or more of the following sources.

Source	No. of selections
S. phureja	12
S. andigena	4
Beltsville	4
Idaho	2
Nebraska	1
Washington	1

Replicated Yield Trials for Protein. These trials included 11 selections and three check varieties which were grown at four locations (Tables 3-6). Twenty hill plots were at each location. The selections have two "wild" or unadapted species in their parentage, *S. phureja* and *S. andigena*, in addition to the cultivated species, *S. tuberosum*. Selections 9732 and 9738 had yields exceeding the checks at Grand Forks. The checks were the highest yielders at Crookston.

Table 7 gives the protein yields in percent of the checks across four locations. Selections 9738 and 9769 had protein yields exceeding the checks.

Table 8 summarizes the protein content for the four locations. Selections 2699, 9730, 9731, 9732, and 9738 had relatively high protein contents and were fairly stable across the four locations. Of these, 2699 is a low yielder and 9730 has low solids.

Minnesota Table 1. Replicated yield trial of advanced selections at Grand Forks and Crookston, 1977.

Variety	Maturity[1/]	Tuber Type[2/]	Yield in Inch Classes 1-3/4-2½	2½-3¼	>3¼	External Defects	Lbs Total[3/] Marketable Yield[4/]	Specific Gravity[5/]	Shape	1976 GF Chip Color 43° F	65° F
4536	2.5	2.3	13.0	25.7	5.2	0.3	43.9	1.081	Blocky	21	28
Pontiac Red	4.8	3.5	8.3	23.6	7.3	0.3	39.2	1.073	Blocky	20	33
*8573	3.0	3.0	13.1	22.6	2.7	1.2	38.1	1.078	Blocky	35	41
*7926	4.0	2.3	16.2	18.9	2.3	0.9	37.4	1.075	Round	10	22
*4858 Red	3.5	2.5	15.3	19.8	1.8	1.1	36.5	1.087	Round	20	29
*8442	4.8	2.5	17.8	19.0	0.5	1.4	36.7	1.083	Blocky	25	40
Norgold Russet	3.5	2.0	19.0	16.0	1.3	0.9	36.2	1.083	Long	-	-
7973	3.8	2.8	13.8	19.4	4.0	2.0	35.7	1.081	Long	-	35
Norland Red	1.8	1.5	17.4	17.0	0.8	0.5	35.2	1.079	Round	26	35
*8020 Red	2.0	2.0	18.8	14.7	0.4	0.8	34.0	1.081	Round	27	36
8224	4.5	3.0	14.0	17.7	2.3	2.4	32.8	1.093	Round	34	42
Kennebec	4.8	3.3	17.5	18.7	0.5	4.8	32.4	1.080	Blocky	-	-
Bison Red	3.0	1.8	14.9	17.5	1.1	1.7	32.4	1.078	Round	-	-
8264 Red	3.8	2.0	15.4	16.4	0.0	1.1	31.4	1.077	Blocky	15	20
*8261 Red	3.5	1.8	12.5	16.2	2.2	0.5	30.9	1.074	Round	16	21
*8373 Lt Purple	4.5	2.0	13.2	16.5	1.1	1.0	30.8	1.089	Blocky	39	36
*8239 Red	2.8	1.8	17.2	12.7	0.6	1.0	30.5	1.083	Blocky	18	35
*8267 Red	4.0	2.0	13.6	17.2	0.0	1.4	30.2	1.078	Blocky	18	21
Norchip	4.3	3.5	17.9	10.5	0.3	1.9	28.7	1.085	Round	40	47
Oneida	4.8	2.5	14.6	17.0	0.3	5.0	27.9	1.091	Round	-	-
8586 Russet	3.3	2.3	21.7	5.4	0.0	2.1	27.2	1.087	Blocky	35	42
8289 Russet	4.3	3.3	20.9	10.6	0.0	6.0	27.0	1.090	Long	25	37
8709	3.8	3.3	20.9	6.7	0.0	2.3	26.6	1.090	Round	46	47
*56179J	4.8	2.3	11.6	14.9	0.0	0.6	26.5	1.079	Blocky	-	-
*8703	4.5	2.5	15.6	11.5	0.4	2.5	26.5	1.087	Round	35	49
Butte Russet	6.0	3.5	20.2	5.6	0.0	7.0	24.8	1.081	Long	-	-
Centenn. Russet	4.8	2.5	15.9	9.1	0.0	1.1	24.5	1.081	Blocky	-	-
Burbank Russet	5.5	3.8	16.3	4.6	0.0	5.1	17.6	1.077	Long	-	-
Targhee Russet	6.0	4.0	10.8	0.7	0.0	3.7	11.4	1.076	Blocky	-	-

1/ Scale 1-6; 1, early; 6, late
2/ Scale 1-5; 1, good; 5, poor
3/ 20 hill plot, 12" between hills, 38" (GF) and 42" (Cr) between rows
4/ LSD_{05}= 12.9
5/ Air-water method
6/ Chip color values of 35 or more are acceptable
*Discarded

Cooperators: Dennis Askim (GF) and Larry Smith (Crox)
Planted: May 20 and May 16, 1977
Harvested: September 17 and September 13, 1977
Fertilizer: 400 lbs/A 20-20-12 and 550 lbs/A 17-17-17

Minnesota Table 2. Replicated yield trial of advanced selections at Becker, 1977.

Variety	Maturity[1/]	Tuber Type[2/]	Lbs of Yield in Inch Classes 1-3/4-2½	2½-3¼	>3¼	External Defects	Lbs Total[3/] Marketable Yield[4/]	Specific Gravity[5/]	Shape
Pontiac Red	4.0	3.0	22.3	60.1	8.5	8.0	84.1	1.067	Blocky
4536 Red	2.0	2.5	19.2	48.3	16.0	3.3	80.6	1.057	Blocky
*8261 Red	3.0	2.0	37.1	32.3	3.9	4.4	70.8	1.058	Round
Oneida	3.0	3.0	30.6	39.5	0.0	1.6	70.5	1.076	Round
8264 Red	2.5	2.0	27.4	43.9	1.8	4.6	69.7	1.060	Blocky
Kennebec	4.5	3.0	19.1	49.5	0.7	1.0	69.3	1.074	Long
*8267 Red	3.0	2.0	35.7	34.8	0.5	3.7	68.7	1.064	Blocky
Burbank Russet	4.5	4.0	61.6	10.1	0.0	6.8	68.6	1.082	Long
Norchip	3.0	3.0	29.6	38.0	3.6	4.7	68.1	1.076	Round
Norland Red	2.0	2.5	18.7	50.7	4.4	8.0	66.7	1.060	Round
*8239 Red	3.0	2.0	43.7	19.8	3.9	4.6	66.7	1.067	Blocky
*7926	3.0	3.0	41.1	23.9	0.0	2.0	65.0	1.064	Round
*8573	2.0	4.0	19.3	41.9	3.0	2.2	64.2	1.059	Blocky
Norgold Russet	2.5	4.0	17.6	44.2	1.0	2.3	62.8	1.070	Blocky
7973	2.5	3.0	18.5	42.2	0.0	1.1	60.7	1.064	Long
Bison Red	2.0	2.0	26.4	44.3	1.8	13.5	60.6	1.064	Round
*8020 Red	3.0	3.0	28.6	32.7	0.0	3.5	59.7	1.058	Round
*4858 Red	2.5	3.0	26.4	33.8	0.8	3.4	59.0	1.072	Blocky
*8373 Lt Purple	1.5	2.0	40.9	15.2	0.8	3.1	56.9	1.074	Blocky
8709	1.5	3.0	31.7	23.7	0.0	2.5	55.4	1.073	Long
Centenn. Russet	2.5	2.5	25.0	30.0	0.0	2.0	55.0	1.070	Blocky
8224	3.0	3.0	23.7	26.8	2.6	3.2	52.2	1.082	Round
*56179J	2.0	2.0	25.1	25.2	0.0	2.0	50.3	1.056	Long
8586 Russet	2.0	3.5	28.3	21.7	0.0	6.4	50.0	1.076	Blocky
*8703	2.0	2.0	33.2	15.9	0.0	2.4	49.1	1.059	Round
8289 Russet	3.0	3.0	19.2	25.5	0.0	2.3	44.7	1.083	Blocky
*8442	3.0	3.0	16.5	27.6	0.7	2.6	43.3	1.066	Blocky

1/ Scale 1-6; 1, early; 6, late
2/ Scale 1-5; 1, good; 5, poor
3/ 20 hill plot, 12" between hills, 36" between rows
4/ LSD_{05} = 10.6
5/ Air-water method
* Discarded

Cooperator: Glenn Titrud
Planted: April 20, 1977
Harvested: August 31, 1977
Fertilizer: 1200 lbs/A 8-10-30
220 lbs/A 34-0-0 Sidedressed May 19
180 lbs/A 34-0-0 Sidedressed June 16

Minnesota Table 3. 1977 protein replicated yield data for Grand Forks.

	Yield lbs.	Protein percent	Lbs. of protein per acre	Yield of protein in percent Kennebec	Norchip
2628	27.7	7.3	278	84	75
2636	24.0	7.8	257	78	69
2699	16.3	9.6	215	65	58
2974	22.7	8.1	252	77	68
9730	23.3	10.0	320	97	86
9731	29.4	8.9	360	109	97
9732	42.7	9.0	528	160	142
9738	60.6	9.2	770	234	208
9757	17.5	9.1	218	66	59
9769	35.4	9.1	445	135	120
9770	43.1	7.8	460	140	124
Kennebec	35.0	6.8	329		
Norchip	39.5	6.8	371		

Minnesota Table 4. 1977 protein replicated yield data for Crookston.

	Yield lbs.	Protein percent	Lbs. of protein per acre	Yield of protein in percent Kennebec	Norchip	Pontiac
2628	30.4	7.8	296	85	81	91
2636	31.7	8.5	333	96	91	103
2699	1.5	10.3	19	6	5	6
2974	15.0	8.6	160	46	44	49
9730	23.4	9.1	265	76	73	82
9731	20.0	9.0	225	64	61	69
9732	22.7	9.3	263	75	72	81
9738	27.2	9.0	304	87	83	94
9757	19.6	8.4	205	59	56	63
9769	27.6	8.5	293	84	80	90
9770	29.6	7.7	285	82	78	88
Pontiac	37.5	7.0	324			
Kennebec	37.8	7.4	349			
Norchip	39.1	7.5	366			

Minnesota Table 5. 1977 protein replicated yield data for Becker.

	Yield lbs.	Protein percent	Lbs. of protein per acre	Yield of protein in percent Kennebec	Norchip	Pontiac
2628	54.0	9.2	719	103	99	91
2636	56.1	8.2	665	96	92	84
2699	27.3	11.0	437	63	60	55
2974	28.3	9.4	386	56	53	49
9730	46.7	9.1	615	89	85	78
9731	54.3	9.7	766	110	106	97
9732	42.7	9.4	582	84	81	74
9738	44.9	10.5	686	99	95	87
9757	49.7	8.7	624	90	86	79
9769	67.1	8.1	788	113	109	100
9770	68.0	8.4	833	120	115	105
Pontiac	80.1	6.8	791			
Kennebec	69.4	6.9	695			
Norchip	66.6	7.5	723			

Minnesota Table 6. 1977 protein replicated yield data for Anoka.

	Yield lbs.	Protein percent	Lbs. of protein per acre	Yield of protein in percent Kennebec	Norchip	Pontiac
2628	2.8	8.0	43	10	19	8
2636	26.0	7.6	384	93	172	73
2699	1.3	8.6	22	5	10	4
2974	4.4	8.4	72	17	32	14
9730	14.0	9.6	260	63	117	50
9731	22.2	9.5	409	99	183	79
9732	11.7	8.8	200	48	90	38
9738	10.5	9.1	186	45	83	36
9757	8.7	9.3	156	38	70	30
9769	36.9	8.7	624	151	280	120
9770	24.5	7.6	362	88	162	70
Pontiac	42.1	6.4	521			
Kennebec	33.1	6.4	413			
Norchip	17.0	6.8	223			

Minnesota Table 7. Protein yields in percent of check varieties at four locations, 1977.

	Grand Forks	Crookston	Becker	Anoka	Average
2628	80	86	98	13	69
2636	74	98	91	113	94
2699	62	6	59	6	33
2974	72	46	53	21	48
9730	92	77	84	76	82
9731	103	65	104	120	98
9732	151	76	79	59	91
9738	221	88	93	55	114
9757	63	65	85	46	65
9769	127	85	107	184	126
9770	132	83	114	107	109

Minnesota Table 8. Protein content in percent of dry weight at four locations, 1977.

	Grand Forks	Crookston	Becker	Anoka	Average
2628	7.3	7.8	9.2	8.0	8.1
2636	7.8	8.5	8.2	7.6	8.0
2699	9.6	10.3	11.0	8.6	9.9
2974	8.1	8.6	9.4	8.4	8.6
9730	10.0	9.1	9.1	9.6	9.5
9731	8.9	9.0	9.7	9.5	9.3
9732	9.0	9.3	9.4	8.8	9.1
9738	9.2	9.0	10.5	9.1	9.5
9757	9.1	8.4	8.7	9.3	8.9
9769	9.1	8.5	8.1	8.7	8.6
9770	7.8	7.7	8.4	7.6	7.8
Pontiac	6.8	7.0	6.8	6.4	6.8
Kennebec	6.8	7.4	6.9	6.4	6.9
Norchip	6.8	7.5	7.5	6.8	7.2

Acknowledgments. Support for these researches is provided in part by Grant-in-aids from the RRVPGA.

MINNESOTA

Edward B. Radcliffe

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Host Plant Resistance to Green Peach Aphid in Potato

Host plant resistance to green peach aphid. We have identified numerous sources of green peach aphid resistance among the wild, tuber-bearing *Solanum* relatives of the cultivated "Irish" potato. A procedure has been developed to permit us to combine results of all the various screening tests over sampling dates, locations, and years, to thereby identify best sources of green peach aphid resistance.

In our studies (1965-77) on green peach aphid in potato we have screened virtually the entire Inter-Regional Potato Collection. From all sources a total of 1330 entries representing 95 *Solanum* species have been screened. In total we have conducted 43 replicated field trials with an average of 145 entries per trial.

In all trials we included a number of representative cultivars as susceptible checks, but these have proven of little value because when green peach aphid populations were high, susceptible plants supported many more aphids than could be counted within the 40 seconds allotted for sampling. To make exhaustive counts would have been prohibitively time consuming. Therefore, we have devised a procedure based on the use of resistant standards to permit comparison of results across trials.

Procedure. In reviewing our data we found nine entries that collectively were represented in 95% of the trials. Further, it turned out these entries had been consistently included because they were highly resistant to green peach aphid. These entries were the following:

Minnesota Table 1. Introductions Used as Resistant Standards for Comparison of Green Peach Aphid Resistance in the Wild, Tuber-bearing *Solanum* species.

Solanum species	Plant Introduction No.
hjertingi,	PI 251063
polytrichon,	PI 184770
	PI 184773
sanctae-rosae,	PI 218221
	PI 230464
stoloniferum,	PI 160226
	PI 186563
	PI 275248
	PI 275249

Over the various trials mean green peach aphid populations on these nine entries ranged from 0.3 to 58.5 aphids/plant, with the mean 12.8. In a few trials one or more of these "standards" were not represented; for these missing values were estimated. For each trial the mean number of green peach aphid/plant on the nine entries was then set equal to 1.0. Mean green peach aphid counts on each of the other entries in that same trial were then expressed as ratios relative to that denominator. Means over tests were calculated for each entry. Individual test data that resulted in green peach aphid ratios that deviated from the overall mean by three standard deviations were disregarded, but these "outliers" were few. Once this operation had been completed it was possible to combine results over trials to obtain a resistance ranking for all entries tested to date. Further, by including these same nine standards in future screening trials it will be possible to compare the preformance of those entries with all entries previously evaluated. For convenience we have adopted a one - five rating system with class limits selected so that the most resistant class is assigned to only a small number of entries, and each succeeding class is assigned to approximately twice as many entries.

Minnesota Table 2. Class Intervals for Green Peach Aphid Resistance Rating System

Class	Mean green peach aphid ratios
1	< 0.5
2	0.5 - 0.99
3	1.0 - 1.99
4	2.0 - 3.99
5	>3.99

Results.

Minnesota Table 3. Distribution of *Solanum* Entries by Green Peach Aphid Resistance Class.

Class	No. of Entries	% of Total
1	41	3.1
2	74	5.6
3	218	16.4
4	343	25.8
5	654	49.2

Minnesota Table 4. Distribution of Entries by Resistance Class in the Various Wild, Tuber-Bearing *Solanum* spp.

Number of Entries by Resistance Class[1]					
	Class				
Species	1	2	3	4	5
acaule			1	26	42
acroglossum		1			
acroscopicum			1		2
agrimonifolium					6
ajanhuiri				1	2
ambosinum				2	
andreanum				1	
berthaultii	1		1	7	9
boliviense			5	3	1
brachistotrichum		2	1		
brachycarpum			1	1	4
brevicaule			1	1	
brevidens			1	1	
bukasovii			3	3	
bulbocastanum	11	6	12	6	
cajamarcense		1		1	
canasense	3	3	16	5	5
capsiccibaccatum	1				
cardiophyllum		6	8	3	3
chacoense				12	39
chancayense					2
chauca					1
chiquidenum	1	1	2	1	
chomatophilum		8			3
clarum		1	1		
coelestipetalum			1		
colombianum				2	2
commersonii			2	1	6
curtilobum					5
demissum		1	3	15	36
etuberosum		3			
fendleri			5	9	6
fernandezianum					1
gandarillasii					3
gourlayi			4	8	10

(Cont. next page)

Species	Class 1	2	3	4	5
guerreroense				1	1
hjertingii			6	1	
hougasii	1				5
huancabambense			1		3
immite				1	2
infundibuliforme	2	1	13	6	6
iopetalum				2	
jamesii		3	6	4	
kurtzianum				3	22
laxissimum					1
lechnoviczii	1				
leptophyes			1	1	
lesteri					1
lignicaule		1	1	1	
lycopersicoides				1	
maglia				1	1
marinasense	2	3	4	1	1
medians	1		3	4	2
megistacrolobum		2	9	10	9
michoacanum	5	5			
microdontum				6	27
mochiense					3
moscopanum					2
multidissectum		3	10	8	1
multiinterruptum		1	1	1	1
ochranthum					1
oplocense			1	7	8
oxycarpum			2	2	1
pampasense			1	1	3
papita			1	2	5
pascoense			1		
paucijugum				1	1
paucissectum				1	1
phureja	2		4	24	16
pinnatissetum			1	8	5
piurae				2	
polyadenium		1	2	1	9
polytrichon	1		4	3	9
pumilum				1	
raphanifolium			2	8	14

(Cont. next page)

Species	Class 1	2	3	4	5
sambucinum				1	1
sanctae-rosae	1	3	3	1	
santolallae			1		
sogarandinum					1
sparsipilum				4	21
spegazzinii			6	5	9
stenophyllidium	1	1	2		
stenotomum			1	10	13
stoloniferum		5	22	16	5
sucrense					10
tarijense			4	5	4
toralapanum		3	1	1	1
tuberosum andigena			4	38	144
tuberosum tuberosum				11	39
tuquerrense		1			
vallis-mexici		1			
venturii				3	1
vernei				1	11
verrucosum			10	4	3
violaceimarmoratum				1	4
weberbaueri			1		

[1]Total does not equal 1330 because species hybrids, unidentified entries and unnamed species are not included.

Mississippi
C.P. Hegwood, Jr.

Irish Potato Variety Trials

Location and Procedure. The 1977 Irish Potato Variety Trials for Mississippi were conducted at the Delta Branch of the Mississippi Agricultural and Forestry Experiment Station. The Delta Station is located in the Yazoo-Mississippi Delta area at Stoneville, MS. In a randomized complete block design with five replications, three cultivars and eleven clone selections were evaluated. Plot dimensions were 3.3 feet by 20 feet. Soil type was Bosket fine sandy loam. Fertilizers (ammonium nitrate and 8-24-24) were applied in a band at the rates of 300 and 200 lbs/A, respectively. Terraclor Super X was applied at the rate of 5 gal/A and incorporated into the seedbeds. Seed pieces were dusted with Captan prior to planting. For chemical weed control Sencor at 1.0 lb/A was used.

Climatic conditions. The growing season was from March 15 to June 8, 1977. No frost or freezing temperatures were experienced in March and the total rainfall for the month was 6.71 inches of which 1.14 inches fell after seeding. Rainfall for April, May, and June was 4.28, 1.29, and 2.80 inches, repectively. The temperatures (average maximum 88° F and average minimum 64° F) for May were the second hottest ever recorded at Stoneville. The temperatures in June for the five days prior to harvest were record highs for those days.

Mississippi Table 1. Yield and quality data for three cultivars and eleven clone selections of Irish potatoes.

Identification	Yields/A cwt[1/]				Specific gravity
	Total	A	B	Culls	
La Chipper	134.1	94.0 bc	30.6 b	9.5	1.066
Kennebec	134.0	102.4 bc	23.2	8.4	1.063
B 7200-26	124.7	89.8 c	29.6	5.3	1.066
B 7859-2	161.6	122.5 abc	31.7	7.4	1.065
B 7151-4	139.3	104.5 bc	26.4	8.4	1.064
B 6987-29	142.6	101.4 bc	31.7	9.5	1.071
B 7139-4	148.9	108.8 abc	31.7	8.4	1.068
B 6987-56	146.7	115.1 abc	25.3	6.3	1.064
B 6987-43	160.6	127.8 abc	22.2	10.6	1.064
B 7694-1	151.0	115.1 abc	30.6	5.3	1.070
B 7767-2	150.0	99.3 bc	41.2	9.5	1.066
B 7809-5	186.9	156.3 a	23.2	7.4	1.067
B 7618-6	179.6	142.6 ab	29.6	7.4	1.065
Atlantic	159.4	119.3 abc	30.6	9.5	1.063

1/ Means not followed by a common letter differ significantly at the 5% level of probability.

NEBRASKA

R. B. O'Keefe and Robert G. Wilson Jr.

In August of 1977 the potato breeding and improvement position and program were moved from Lincoln to facilities at the University of Nebraska Panhandle Station in the major potato growing area of western (Scottsbluff) Nebraska. Office, laboratory and greenhouse space for potato genetic and graduate student research programs are being maintained at the Institute of Agriculture and Natural Resources in Lincoln.

Heat and Drouth Studies

Presently one graduate student (Ahmed Elfigih from Libya) is investigating the genetic and physiological nature of heat and drouth stress in Solanum species and hybrids. Correlations of the chlorophyll stability and detached leaf methods with results obtained with the Nebraska heat chamber method will also be studied.

Genotype and Environmental Effects on Glycoalkaloid and Protein Contents of Potatoes

The North Central States regional trials provided potato samples of 39 advanced selections from 11 locations for the determination of genotypic and environmental effects on glycoalkaloid content of potatoes in 1975 and 1976.

Four standard varieties and 10 selections were common to both years at 9 locations. The glycoalkaloid content over all locations and genotypes ranged from 1.74 to 63.18 for both years. Variation among genotypes was greater than among locations but the mean values for genotypes was more stable over years than mean values for locations. Mean values of locations tended to increase with latitude and from summer crop areas to fall crop areas. The highest mean value for glycoalkaloid content among the standard varieties was measured for Russet Burbank followed in decreasing order by Norchip, Norland and Red Pontiac (Nebraska Table 1).

Four standard varieties and 18 advanced selections from 13 locations are being analyzed in 1977. Genotype, environment and interaction effects and heritability will be determined using three years of data.

As previously reported, the protein content of potatoes as determined by the Lowry and modified Lowry methods has been associated with very low heritability values using NCS trial samples. In 1976 and 1977, the micro-kjeldahl and modified Lowry methods were used. Data have not been summarized.

Winter Testing and Indexing of Seed Stocks

Five tubers of each of 422 selections in the potato breeding program were indexed and grown at the Experiment Station in Mesa, Arizona. Seven leafroll (0.3%), 8 spindle-tuber (0.3%) and 3 mosaic (0.1%) plants were identified in a total of 2110 hills. Plant growth and "reading" conditions were excellent.

Nebraska Table 1. Glycoalkaloid contents in potatoes in the NCS trials.

Location	Rank	1976 Average mg./100g.	Rank	1975 Average mg./100g.	Rank	2-Year Average mg./100g.
Minnesota	(1)	20.17	(4)	6.43	(1)	13.30
S. Dakota	(2)	13.64	(5)	5.43	(4)	9.53
N. Dakota	(3)	12.08	(1)	10.98	(2)	11.53
Wisconsin	(4)	11.29	(2)	8.42	(3)	9.85
East. Nebr.	(5)	10.99	(8)	4.28	(5)	7.63
West. Nebr.	(6)	7.57	(6)	4.70	(6)	6.14
Michigan	(7)	5.67	(9)	2.73	(8)	4.20
Kansas	(8)	3.84	(3)	6.43	(7)	5.13
Missouri	(9)	3.57	(7)	4.65	(9)	4.11
Average 1/		9.87		6.00		
Selections						
Wisc. W 718	(1)	27.37	(2)	12.31	(1)	19.84
Nebr. 42-1	(2)	17.35	(5)	6.79	(3)	12.07
Wisc. 726	(3)	16.06	(4)	6.81	(4)	11.44
ND 8913-4	(4)	11.29	(3)	10.80	(5)	11.04
Rus. Burbank	(5)	10.49	(1)	14.08	(2)	12.28
Minn. 3866	(6)	9.95	(9)	3.91	(7)	6.93
Norchip	(7)	9.28	(7)	4.89	(6)	7.08
Wisc. W 729R	(8)	7.93	(6)	5.38	(8)	6.65
ND 8891-3	(9)	6.45	(10)	3.86	(9)	5.15
Norland	(10)	6.04	(11)	3.50	(10)	4.77
Red Pontiac	(11)	4.67	(13)	2.99	(12)	3.83
La. 11-118	(12)	4.15	(14)	2.75	(13)	3.45
La. 01-70	(13)	3.80	(8)	4.64	(11)	4.22
La. 11-24	(14)	2.79	(12)	3.14	(14)	2.96
Average 2/		9.83		6.13		

1/ 21 selections 1975; 19 selections 1976

2/ Average of 14 selections common to both 1975 and 1976 trials.

In addition, 10 tubers of each of 32 varieties and strains within the virus-X free basic seed program (Scottsbluff) and 18 from the non-tested stocks (Alliance) were grown for observation. Leaf-roll was identified in Russet Burbank, Haig, Dark Red Norland and Norchip in stocks derived from 1975 stem cuttings and in Dark Red Norland, Norchip, and Red LaSoda #10 in the 1-year basic seed stocks. No virus was noted in stocks from the NWAL in Alliance. Twenty percent mixture between Bounty and Sioux was noted.

Units of 14 new varieties and advanced selections in the program at the NWAL were tested for virus-X freedom in the summer of 1976. Five tubers of each virus-X free unit were grown in Arizona in 1977 and leaf samples returned to Lincoln for virus-X testing. Fifty-eight (83%) of the units tested were found to be virus-X free.

Selection and Screening of Advanced Clones in Arizona

By cooperative agreement with the University of Arizona, advanced clones in the Nebraska winter test plots are selected and tested for potential release as varieties for Arizona. The selected clones are grown in 2 replicates of 5-hills the year following selection. The clones are evaluated for vigor, heat and frost tolerance, yield, tuber size, specific gravity and chipping quality. The data for highest yielding 31 of the 52 clones tested are presented in (Nebraska Table 2). Yields ranged from 168 to 481 cwt./acre. Tuber size ranged from 5.3 to 16.0 oz. Specific gravity ranged from 1.054 to 1.095. The following Nebraska clones and varieties were identified for testing in advanced trials in 1978:

White chipping varieties - 43.66-1, A149.70-1, A158.70-2, A167.70-2, A5.72-1, A9.72-1 and Atlantic.

Russet varieties - 5.72-2, 12.72-1, and A71.72-1.

Red varieties - A219.70-2, A131-4, A77.72-1 and Nebr. 118.

The 14 superior varieties and clones selected for advanced testing from the 1976 5-hill trials were grown in 4 replicates of 20-hills and compared with Kennebec, Norgold and Red LaSoda. Vigor, yield, grade quality, tuber size specific gravity and chipping quality were determined (Nebraska Table 3). Yields ranged from 176 (Norgold) to 415 cwt/acre (17.72-5). Percentages of US#1 ranged from 25 (Kennebec) to 74 (18.66-1). Oversize was the major factor in sort-outs. Average tuber size within A-size grade ranged from 4.7 to 7.5 oz. Specific gravity ranged from 1.062 (Norgold) to 1.091 (AK37.68-19-70). The superior Nebraska clones selected for seed increase for commercial demonstration plantings are:

White chipping varieties - AK37-68-19-70, (Alaska) 18.66-1, 17.72-5, A26.72-2 and Cascade.

Russet varieties - Nebr. 42-1 and Nebr. 498. Nebr. 42-1 was commercially tested in the Tolleson area in 1976. Vigor and growth were comparable to Centennial but stands were poor. As noted, Norgold (sampled from seed program) was superior to Centennial in these trials.

Red varieties - A143.70-2

Potato Trials in Nebraska

The North Central States trials in 1977 were grown in the summer crop area (Archer) and fall crop area (Alliance) under center pivot irrigation. The trials included 16 advanced selections from 7 breeding programs and the standard varieties Norland, Norchip, Russet Burbank and Red Pontiac. The superior selections in the summer crop area were Minn. 7973 (white), A68678-1 (russet) and Neb. 18.66-1 (white). The superior selections in fall crop area were La. 01-70 (white), Neb. 17.67-1 (white). A 68678-1 (russet), Wisc. 738 (white) and Wisc. 723 (white).

Nebraska Table 2. Arizona first year potato selection trial 1977, Mesa Experiment Station.

Selection	Color 1/	Maturity	Yield Cwt/A.	Avg. Tuber Size Oz.	Specific Gravity	Chip Color PCII	Defects
12.72-1	Rus	Early	481	7.5	1.079	2	Skinning
9.72-2	W	Med.	470	6.4	1.069	3	Nec., Small
A149.70-1	W	Late	465	14.2	1.066	2	Oversize
16.72-1	Rus	Med.	439	16.0	1.066	2	Oversize
Neb. 118	R	Late	437	12.8	1.081	3	
5.72-2	Rus	Early	435	5.3	1.077	3	Yellow Flesh
A3.62-26	R	Late	405	9.1	1.083	3	Overbrown
A234-3	Rus	Med.	400	9.1	1.078	3	
Neb. S-1	W	Late	392	7.5	1.071	2	
A71.72-1	Rus	Med.	372	7.5	1.084	2	
A9.72-1	W	Early	356	9.1	1.081	2	
A69.72-1	Rus	Late	354	---	-----	--	
A131-4	R	Late	349	8.0	1.091	2	
A158.70-2	W	Late	348	18.2	1.074	2	Oversize
A242.69-1	W	Late	339	5.3	1.086	3	Necrosis, Sml.
A234-1	W	Med.	339	7.5	1.066	5	
20.72-2	W	Early	337	11.6	1.054	3	Off type
A5.72.1	W	Med.	322	6.7	1.081	5	
A210-2	Rus	Med.	322	3.2	1.082	2	Small
43.66-1	W	Med.	321	6.7	1.076	2	
A167.70-2	W	Late	319	7.5	1.086	1	
90S.72-3	W	Med.	315	6.1	1.076	1	Necrosis
7.67-1	W	Med.	304	5.3	1.068	1	Growth Cr.
58.66-1	Rus	Med.	301	6.7	1.066	4	
A219.70-2	R	Med.	298	7.1	1.075	3	
89S.72-3	W	Med.	297	6.7	1.072	3	Necrosis
A77.72-1	R	Early	295	6.4	1.071	1	
11.67-1	W	Late	287	6.4	1.069	2	Small
A241.69-1	W	Late	278	11.6	1.071	3	Deep eye
22.67-1	W	Med.	168	7.5	1.066	2	Small
Atlantic	W	Med.	--- 2/	4.7	1.095	3	Small

Planted: January 1. Harvested: June 2. Spacing: 10" X 34"

Fertilizer: 210-538-0 Thimet 21 lbs./A. 2 replicates of 5 - hills.

1/ Color: W=White, Rus.= Russet, R=Red.

2/ Yield sample lost.

Nebraska Table 3. Arizona potato variety and advanced selection trial 1977, Mesa Experiment Station.

Selection	Color 1/	Maturity	Yield cwt/A	Percent Each Grade: US#1	Sort Outs	Over 4 in.	Under 1 7/8 in.	Avg. Tuber Size oz. 2/	Specific Gravity	Chip Color PCII	Defects 3/
17.72-5	W	Med.	415	64	6	24	4	5.3	1.076	3	Imm.
Cascade	W	Med.	348	40	4	53	1	6.7	1.085	2	
Red LaSoda	R	Med.	306	48	16	32	2	7.5	1.070	2	OT, GC
A26.72-2	W	Med.	303	40	13	41	4	4.9	1.080	4	OT, Sml
Neb. 498	Rus	Late	286	62	10	17	8	6.7	1.088	3	Imm.
Kennebec	W	Late	253	25	41	32	2	6.4	1.080	2	Imm., K.
AK37-68-19-70	W	Med.	251	58	5	33	3	6.4	1.091	2	
212.69-1	R	Late	229	41	15	37	5	7.5	1.075	3	Scab
17.67-1	W	Med.	222	49	18	26	5	5.8	1.075	3	OT, GC
A147.71-1	W	Med.	221	62	4	28	3	6.1	1.075	5	Necrosis
A143.70-2	R	Med.	216	48	23	24	3	5.3	1.076	3	Imm.
18.66-1	W	Med.	216	74	2	18	4	6.1	1.075	3	
Neb. 42-1	Rus	Med.	199	56	15	21	6	6.7	1.080	5	Imm., GC
A102.71-2	Rus	Med.	189	14	50	32	2	5.8	1.080	4	Imm., GC
Norgold	Rus	Early	176	62	3	20	15	4.7	1.062	5	
Centennial	Rus	Early	155	69	2	18	9	6.1	1.072	4	

Planted: Jan. 1, Harvested: June 2, Spacing: 10" X 34".
Fertilizer 210-538-0 Thimet 21 lbs/A. 4 relicates of 20-hills.

1/ Color: W=White, Rus=Russet, R=Red.

2/ Average tuber size in ounces for US#1 A-size.

3/ Defects: Imm. = Immature skinning, K=Knobs, OT=Off type, GC=Growth crack, Sml=Small

Tests of 22 new varieties and advanced selections from the Nebraska program were included with the North Central Trials at the two locations. The superior selections in the summer crop trials were as follows (Nebraska Table 4):

White chipping selections - AK37-19, Cascade and Snowchip.

Russet selections - Neb. 498, A69.72-1 and Neb. 74-1.

Red selections - A143.70-2, 7.67-1 and A212.69-1.

In the fall crop trial, the superior selections were (Nebraska Table 5):

White chipping selections - A147.71-1, A129.69-1 and Snowchip.

Russet selections - 28.67-1, A63.71-1, Neb. 74-1 and Neb. 42-1.

Red selections - A143.70-2 and 7.67-1.

Cultural Studies

The use of Benlate (1% dust) alone and in combination with Manzate (8% dust) as a seed treatment was studied with the variety Norland at the Northwest Agricultural Laboratory. No significant differences were noted in stands though the stand obtained with Benlate alone was lower than when used in combination with Manzate or Manzate alone.

The use of electrical vine killing was investigated in cooperation with the Lockwood Grader Division of Gering, Nebraska. The variety Monona was treated at the Mitchell Station. Both 2-row and 4-row plots were treated at two voltage levels at two tractor speeds. Vine killing was effective but erratic. No significant differences were noted in yield, grade or chipping quality.

Seed samples were grown in Arizona from each treatment. There was no effect on stand but the emergence and early growth from the 2-row treatments were retarded when compared with the 4-row treatments.

Potato Weed Control Studies

A field study was initiated by Robert G. Wilson, Jr. at Alliance, Nebraska to compare the effectiveness of individual herbicides and herbicide combinations for selective weed control in Norchip potatoes. The experimental design was a randomized complete block with four replications. Plots were located on a clay loam soil with a 1.2% O. M. content. The plot area was plowed on May 20 and potatoes were planted on May 23, 1977. The seed of barnyard grass, kochia, pigweed, lambsquarter, and hairy nightshade was distributed over the plot area on May 26 and incorporated into the soil with a rolling cultivator. Premergence herbicides were applied on May 26, 1977 on a cloudy day, with an air temperature of 75 F, soil temperature of 72 F, relative humidity of 64%, and a 6-8 mph wind. Herbicides were incorporated within 1/2 hour after application with a Lilliston rolling cultivator set to incorporate 1-2 inches deep. Significant rainfall after herbicide application was as follows: May 26, 0.20 inch, May 29, 0.43 inch, June 3, 0.31 inch and June 5, 0.22 inch. Postemergence herbicides were applied on

Nebraska Table 4. Eastern Nebraska summer crop potato trial 1977.

Selection	Color 1/	Total Yield (Cwt/A)	Percent Each Grade US#1	Sort Out	Under 1 7/8"	Specific Gravity	Chip Color (PCII	Defects 2/
AK37-19	W	277	86	2	12	1.081	3	-
Cascade	W	271	77	6	17	1.069	4	OT, BE
Neb. 498	Rus	246	78	0	22	1.063	4	
43.66-1	W	243	79	4	17	1.062	4	PE
Snowchip	W	237	81	12	8	1.062	3	DAE
Norchip	W	207	74	2	24	1.076	5	SG, OT
A143.70-2	R	198	77	5	18	1.066	6	BE
A69.72-1	Rus	195	88	4	8	1.070	6	
A147.71-1	W	193	88	0	12	1.066	5	
7.67-1	R	189	85	3	11	1.058	4	
A129.69-1	W	189	85	4	11	1.065	7	
A112.69-1	W	180	83	3	13	1.071	7	K
54.58-H33	W	180	75	7	17	1.062	6	Scab
Rus. Burbank	Rus	173	47	13	40	1.074	5	K, OT, PE
Neb. 74-1	Rus	160	71	10	19	1.060	3	-
Neb. 74-2	Rus	158	75	1	24	1.059	5	
28.67-1	Rus	148	70	16	14	1.065	5	
A212.69-1	R	139	89	0	11	1.054	6	
A63.71-1	Rus	137	83	0	17	1.062	4	Long
Neb. 42-1	Rus	135	58	3	39	1.056	5	
Norland	R	133	66	3	31	1.056	7	GC, OT
Sioux	R	119	76	0	24	1.074	4	
Centennial	Rus	113	74	4	21	1.064	6	
A102.71-2	Rus	73	74	7	18	1.055	6	Small
Atlantic	W	48	53	0	48	-----	-	

Planted April 8. Harvested August 3. Spacing 9.5# x 36"; 2 Replicates of 20-hills.
Fertilizer 300-200-250, 5# Zn.
Di-Syston 10G at 20#/acre, three Guthion sprays for Corn Borers (severe damage reduced yields).

1/ Color: W=White, Rus=Russet, R=Red.
2/ Defects: DE=Deepeye, OT=Off-type, PE=Pointed end, OS=Oversize, GC=Growth Crack, SG=Sungreen, HH=Hollow Heart, K=Knobs.

Nebraska Table 5. Western Nebraska fall crop potato trial 1977.

Selection	Color 1/	Total Yield (Cwt/A)	Percent Each Grade US#1	Sort Out	Under 1 7/8"	Specific Gravity	Chip Color (PCII)	Defects 2/
43.66-1	W	524	82	12	5	1.070	4	GC, Skin
Norchip	W	514	63	32	5	1.082	3	GC
A147.71-1	W	503	78	20	2	1.080	3	OS, OT
28.67-1	Rus	483	71	26	3	1.073	4	OS, GC
Sioux	R	460	79	18	3	1.077	3.5	OS
Cascade	W	448	66	29	5	1.067	3.5	PE, OT
A143.70-2	R	436	73	21	5	1.072	5.5	BE, OS
A63.71-1	Rus	435	68	28	4	1.072	4	OS, PE
A129.69-1	W	424	84	10	6	1.089	3.5	Scab, SG
Norland	R	418	81	15	4	1.064	3	OT, GC
Snowchip	W	413	68	28	5	1.082	3	DE, K, OS
Neb. 74-1	Rus	413	75	19	6	1.069	4	OT, PE
Rus. Burbank	Rus	396	38	54	7	1.087	5	PE, K
Neb. 42-1	Rus	391	67	28	5	1.076	4	OS, OT
7.67-1	R	384	83	13	4	1.064	4	GC, OT
AK37-19	W	372	65	31	4	1.086	3.5	OS, K
A69.72-1	Rus	364	49	44	7	1.076	4	OS, OT
A112.69-1	W	356	57	37	6	1.082	5.5	OS, K, Skin
A102.71-2	Rus	356	65	32	2	1.066	3.5	OS, OT, Skin
Centennial	Rus	355	79	16	5	1.070	5	Scab, OS
A212.69-1	R	350	74	23	2	1.076	4	OS, Skin
54.58-H33	W	346	90	5	5	1.064	3	Scab, OT
Neb. 498	Rus	335	72	22	6	1.074	3	PE, OT
Atlantic	W	308	81	13	6	1.078	4.5	PE, OT
Neb. 74-2	Rus	294	83	9	9	1.067	4	BE. OT

Planted May 18. Harvested September 22. Spacing 9.5 x 36"; 2 Replicates of 20-hills.
Fertilizer 200-200-205; 5# Zn, 15# Mg, 20# S, 5# Mn, 1# Cu.
Di-Syston 15G at 15#/acre.

1/ Color: W=White, Rus=Russet, R=Red.
2/ Defects: DE=Deepeye, OT=OFF-type, PE=Pointed end, OS=Oversize, GC=Growth Crack, SG=Sun Green, HH=Hollow Heart, K=Knobs.

June 28, when potatoes were 11 inches tall and in the 6-7 leaf stage of growth, grassy weeds were 4 inches tall and broadleaf weeds were 5-6 inches tall. Weather on the day of application was as follows: air temperature 75 F, soil temperature 74 F, relative humidity 48%, wind 0-7 mph and treatments were applied on a clear day between 10:00 and 11:30 in the morning. All preemergence herbicide treatments were applied with a tractor mounted sprayer calibtated to deliver 20 gallons per acre at 30 psi. Postemergence treatments were applied with a CO_2 powered hand sprayer calibrated to deliver 14 gallons per acre at 30 psi. (Nebraska Table 6).

Weed species present in the study were rough and redroot pigweed, kochia, common lambsquarter, and green foxtail. A number of herbicide treatments caused early potato injury, however, potato plants out-grew this injury, and no herbicide treatment significantly reduced potato yield from that of the handweeded check. Herbicide treatments producing the most satisfactory weed control with good selectivity to the crop were as follows: Dual + Lexone 4L at 1.5 + 0.5 lb/A, Lasso + Lexone at 2.4 + 0.45 lb/A, Lasso + Linuron at 2.2 + 0.8 lb/A, Lexone 4L at 1.0 lb/A, Lexone + Treflan at 0.5 + 0.5 lb/A, and Probe + Lasso at 0.5 + 2.0 lb/A. Sequential herbicide treatments providing excellent weed control were: Lexone + Lasso preemergence at 0.5 + 2.0 lb/A followed postemergence by Lexone at 0.5 lb/A and Treflan + Eptam preemergence at 0.5 + 2.0 lb/A followed postemergence by Lexone at 0.5 lb/A. The only treatment to significantly reduce the specific gravity of potatoes was Probe + Lasso at 0.5 + 2.0 lb/A. (Nebraska Table 7.)

Nebraska Table 6. Potato weed control treatments.

Herbicide Treatments	Time[a] Application	Rate lb/A ai	Stand[b] Count Plants/A	Potato[c] Injury 1-100	Redroot Pigwood	Kochia	Common Lambsquarter	Green Foxtail	Avg. Weed Control Rating
					-Percentage Weed Control[d]-				
Handweeded check	-	-	11,000	0	100	100	100	100	100
Weedy check	-	-	9,400	3	0	0	0	0	0
Cobex	Pre	0.66	13,400	5	98	93	94	99	96
Cobex + Lexone 4L	Pre	0.33 + 0.5	11,200	1	98	100	88	96	95
Cobex + Eptam	Pre	0.33 + 2.0	11,600	3	86	48	100	92	81
Dual	Pre	2.5	10,500	3	96	93	71	97	89
Dual + Lexone 4L	Pre	1.5 + 0.5	11,800	5	100	100	100	98	99
Eptam	Pre	3.0	11,200	5	88	97	41	95	80
Eptam + Treflan	Pre	2.0 + 0.5	10,700	0	96	100	88	96	95
Lasso	Pre	3.0	12,300	9	96	93	71	93	88
Lasso + Lexone (Mix)	Pre	2.0 + 0.38	14,200	1	94	100	94	96	96
Lasso + Lexone (Mix)	Pre	2.4 + 0.45	10,500	2	99	100	100	96	98
Lasso + Linuron (Mix)	Pre	1.8 + 0.7	13.100	3	99	97	88	85	92
Lasso + Linuron (Mix)	Pre	2.2 + 0.8	12,300	1	99	100	100	98	99
Lexone 4L	Pre	1.0	12,600	0	100	100	100	99	99
Lexone 50W/Sencor 80W	Pre	1.0	13,100	1	85	100	88	82	88
Lexone 50W + Lasso	Pre	0.5 + 2.0	12,300	3	95	100	100	78	93
Lexone 4L + Lasso	Pre	0.5 + 2.0	11,300	3	100	100	88	86	93
Lexone 4L + Treflan	Pre	0.5 + 0.5	11,800	8	97	100	94	98	97
Lexone 4L + Lasso	Pre	0.5 + 2.0							
Lexone 50W	Post	0.5	13,500	9	100	100	94	99	98
Probe	Pre	0.75	11,100	1	63	66	71	66	66
Probe + Lasso	Pre	0.5 + 2.0	10,700	3	94	100	100	98	98
Probe + Lasso	Pre	1.0 + 4.0	13,900	1	95	97	100	98	97
Probe + Eptam	Pre	0.5 + 2.0	11,500	3	80	31	94	85	72
Probe + Eptam	Pre	1.0 + 4.0	11,100	1	87	83	88	97	88
RH 6201	Pre	2.0	12,100	3	96	100	94	96	96
RH 6201	Post	1.0	12,200	3	41	24	0	33	24
Treflan + Eptam	Pre	0.5 + 2.0							
Lexone 50W	Post	0.5	11,700	4	98	100	94	96	97
Weeds/sq ft in untreated check			-	-	0.9	0.2	0.1	2.5	
L.S.D. at 5% level			3,000	-	18	46	39	28	

[a]Time of application: Pre=Preemergence, incorporated with a rolling cultivator; Post=Postemergence application.
[b]Stand count: Plants per acre, taken June 24, 1977.
[c]Potato injury: Visual potato injury on a 1-100 scale, taken July 11, 1977. 0=no injury, 100=complete kill.
[d]Weed control determined by weed counts, taken July 11, 1977 in an 150 sq. ft. area in each plot.

Nebraska Table 7. Effect of potato weed control treatments on yield and quality.

Herbicide Treatments	Time of Application	Rate lb/A ai	Total Yield[a]	US#1	US#2	Sort-outs	Specific Gravity
			cwt/A	cwt/A	cwt/A	cwt/A	
Handweeded check	-	-	181	89	67	25	1.090
Weedy check	-	-	156	76	44	35	1.085
Cobex	Pre	0.66	165	66	76	23	1.090
Cobex + Lexone 4 L	Pre	0.33 + 0.5	206	88	82	36	1.088
Cobex + Eptam	Pre	0.33 + 2.0	274	133	105	36	1.089
Dual	Pre	2.5	199	90	80	30	1.090
Dual + Lexone 4L	Pre	1.5 + 0.5	229	102	96	32	1.085
Eptam	Pre	3.0	219	103	85	30	1.089
Eptam + Treflan	Pre	2.0 + 0.5	245	115	88	42	1.086
Lasso	Pre	3.0	204	105	75	28	1.088
Lasso + Lexone (Mix)	Pre	2.0 + 0.38	195	88	75	31	1.088
Lasso + Lexone (Mix)	Pre	2.4 + 0.45	217	72	118	27	1.084
Lasso + Linuron (Mix)	Pre	1.8 + 0.7	241	123	94	25	1.089
Lasso + Linuron (Mix)	Pre	2.2 + 0.8	174	101	76	35	1.086
Lexone 4L	Pre	1.0	251	124	98	28	1.087
Lexone 50W/Sencor 50W	Pre	1.0	215	95	74	46	1.091
Lexone 50W + Lasso	Pre	0.5 + 2.0	193	89	67	37	1.087
Lexone 4L + Lasso	Pre	0.5 + 2.0	197	94	81	21	1.086
Lexone 4L + Trelfan	Pre	0.5 + 0.5	204	95	82	27	1.087
Lexone 4L + Lasso	Pre	0.5 + 2.0					
Lexone 50W	Post	0.5	247	132	71	44	1.088
Probe	Pre	0.75	236	130	60	44	1.085
Probe + Lasso	Pre	0.5 + 2.0	233	100	105	28	1.081
Probe + Lasso	Pre	1.0 + 4.0	127	96	90	27	1.089
Probe + Eptam	Pre	0.5 + 2.0	224	110	78	36	1.090
Probe + Eptam	Pre	1.0 + 4.0	279	136	116	27	1.084
RH 6201	Pre	2.0	179	76	71	31	1.084
RH 6201	Post	1.0	204	90	68	46	1.088
Treflan + Eptam	Pre	0.5 + 2.0					
Lexone 50W	Post	0.5	219	92	98	23	1.088
L.S.D. at 5% level			75	48	46	19	0.0065

[a] Potatoes harvested on September 26, 1977.

NEW JERSEY

R. L. Nickeson, F. L. Merwarth, T. E. Snyder

Campbell Institute for Agricultural Research

From approximately 54,000 first year seedlings grown at the breeding farm at Perham, Maine, nearly 2000 were saved for replanting. In the first clonal generation 1678 selections were planted and 265 saved for preliminary processing tests and replanting. Of the 252 selections planted in the second clonal generation 88 were saved for processing tests and possible replanting in replicated trials. A total of 122 selections were planted in replicated trials in Maine; the more advanced ones were planted in one or more replicated trials in other states.

Data reported are from replicated trials in Maine and New Jersey and represent the more advanced selections. Experimental design was a RCB, usually with four replicates. Plot size was 25 hills spaced ten inches apart in rows three feet apart. Planting and harvest dates, fertilization and cultural methods were similar to those practiced in the areas in which the trials were located. Unless otherwise noted, chip color indices were from tubers stored at least two months at 40° F., then reconditioned for three to four weeks prior to frying. French fry texture values were from tubers stored at 40° F.-45° F. and fried directly.

EXPLANATION OF TABLE HEADINGS

S.G. - specific gravity, 1.0 deleted
Tuber rating - 1 = poor to 5 = excellent
Chip color - PCII scale from 1 = white to 10 = dark brown
French fry texture - 1 = soggy to 5 = mealy
Boiled texture - 1 = soggy to 5 = mealy

Campbell Table 1. Field performance and processing characteristics of entries in New Jersey Trial 1, grown at Elmer, N. J., 1977.

Selection	Yield over 2 ins. cwt./A	S.G.	Tuber Rating	Chip Color	Boiled Texture
Campbell 11	286	78	3.7	6.6	3.8
Campbell 12	356	72	2.9	8.0	2.5
Campbell 13	302	71	4.1	7.7	2.5
BR7108-2	312	72	3.0	7.4	3.3
CA02-7	273	66	3.1	5.8	2.1
CA46-11	344	71	3.4	6.3	2.4
CA55-24	301	74	3.1	4.8	2.9
CC05-17	254	72	2.4	7.8	2.3
CC54-8	233	81	3.7	6.1	3.8
CD03-4	265	67	3.5	7.8	1.8
CD08-21	249	73	3.5	6.3	3.5
CD08-29	281	68	2.4	8.5	1.3
CD34-2	278	76	3.7	7.6	2.9
CD67-2R	286	83	3.1	6.8	3.6
CD70-22	341	69	2.9	8.5	2.6
CD81-16	364	70	3.7	8.1	3.0
CD106-16	363	77	3.5	7.3	2.8
CD137-5R	257	85	4.0	5.9	2.8
AF24-33c	310	76	3.5	7.0	2.8
AF40-9c	324	73	3.4	7.1	3.3
CC54-3a	336	67	2.6	6.6	2.8
Kennebec	286	67	2.0	7.3	2.0
Superior	310	70	2.7	7.7	2.3
Katahdin	299	65	3.2	8.0	1.5
Mean	326	72	3.2	7.1	2.7
Bayes LSD 5%	47	6	0.6	1.1	0.9
CV%	10	6	14	11	24

Campbell Table 2. Field performance and processing characteristics of entries in New Jersey Trial 2, grown at Elmer, N. J., 1977.

Selection	Yield over 2 ins. cwt./A	S.G.	Tuber Rating	Chip Color	Boiled Texture
BR7088-18	292	82	3.4	6.3	3.1
BR7090-17	305	70	3.6	5.3	3.0
CS7212-2	216	60	3.1	5.9	1.9
CS7215-12	252	81	4.0	7.8	3.0
CS7216-6	267	66	2.5	9.0	1.6
CS7218-11	289	82	3.6	5.8	3.8
CS7220-10	301	72	3.5	9.0	2.4
CS7221-7	282	87	3.5	7.1	3.3
CS7227-28	343	60	3.6	8.8	1.3
CS7227-32	261	61	2.7	9.4	1.4
CS7232-4	326	72	4.0	8.2	2.4
CS7232-7	326	70	4.2	9.1	3.0
CS7232-25	336	75	2.8	5.6	3.1
CS7236-2	260	73	3.0	6.5	3.1
CS7265-24	342	60	3.8	7.8	1.8
CS7285-10	326	61	3.8	8.6	2.9
CS7292-1	322	68	3.1	8.6	2.0
CS7294-10	354	70	3.6	5.8	3.6
CS7296-5	379	70	3.0	7.2	2.6
AF201-4c	360	70	3.6	9.1	1.8
AF201-10c	286	66	4.0	8.0	2.8
AF204-5c	311	66	3.5	8.6	1.5
Superior	315	70	2.7	7.4	2.6
Katahdin	294	60	3.2	8.6	1.5
Mean	306	70	3.4	7.7	2.5
Bayes LSD 5%	51	4	0.5	1.0	0.8
CV%	12	4	11	10	10

Campbell Table 3. Field performance and processing characteristics of entries in New Jersey Trial 3, grown at Elmer, N. J., 1977.

Selection	Yield over 2 ins. cwt./A	S.G.	Tuber Rating	Chip Color	Boiled Texture
CS7304-3	286	74	2.8	8.2	3.1
CS7309-11	282	74	3.6	7.7	3.1
CS7311-7	292	74	3.4	8.1	2.5
CS7322-15	268	61	3.9	9.0	1.1
CS7322-49	286	70	3.2	8.5	2.2
CS7333-23	270	76	3.0	8.0	3.5
CS7336-14	396	58	3.9	8.2	1.0
CS7339-15	342	82	3.1	7.5	3.5
CS7354-1	321	68	3.5	8.2	3.4
CS7355-2	302	74	4.2	8.7	3.6
CS7355-3R	358	76	3.8	8.4	4.0
CS7355-8R	238	70	3.9	8.4	3.1
CS7355-13	433	73	4.1	9.0	3.6
CS7355-17R	262	66	4.1	8.8	2.1
CS7355-21	343	76	3.8	6.9	2.6
CS7356-3	258	74	3.1	8.4	2.4
CS7368-2	283	56	3.9	9.4	1.0
CS7395-9	338	75	4.0	8.9	2.6
CS7396-10	286	65	3.1	8.2	1.1
CS73100-11	252	59	3.2	8.9	1.9
CS73107-8	346	78	3.8	8.4	3.1
CS73132-2	341	74	4.0	8.1	3.0
Superior	356	73	2.9	7.4	3.6
Katahdin	341	60	3.4	7.8	1.5
Mean	312	70	3.6	8.4	2.6
Bayes LSD 5%	50	4	0.7	0.7	0.9
CV%	12	4	13	6	26

Campbell Table 4. Field performance and processing characteristics of entries in Maine Soup Trial 1, grown at Perham, Maine, 1977.

Selection	Yield over 2 ins. cwt./A	S.G.	Tuber Rating	Chip Color	French Fry Texture
CA02-7	370	62	3.2	6.0	3.1
CC05-17	308	59	2.2	9.8	1.5
CS7212-2	280	53	3.0	10.0	1.8
CS7212-4	388	55	3.2	6.8	2.2
CS7220-10	278	57	2.8	6.8	1.9
CS7227-28	369	51	3.1	7.8	1.4
CS7227-30	354	54	2.1	9.8	1.8
CS7227-32	438	53	2.8	9.0	1.4
CS7265-24	421	55	2.8	7.0	2.1
CS7292-1	360	60	1.9	8.3	2.0
CS7307-3	267	56	2.5	8.0	2.0
CS7324-12	331	62	2.9	8.8	1.4
CS7336-14	410	55	2.5	9.5	1.5
CS7339-15	376	61	2.6	8.3	1.9
CS7354-1	380	62	2.6	9.8	1.5
CS7355-13	334	66	3.1	7.5	2.2
AF237-4c	342	52	2.5	9.8	1.9
Campbell 13	383	66	3.0	7.5	2.5
Katahdin	320	57	2.6	7.0	1.8
Kennebec	372	58	2.1	6.8	2.5
Raritan	234	65	2.0	6.8	3.2
Superior	431	66	2.4	6.0	3.0
Wauseon	321	56	2.2	6.8	1.4
Mean	351	58	2.6	8.0	2.0
Bayes LSD 5%	50	4	0.6	0.8	0.6
CV%	11	5	15	8	22

Campbell Table 5. Field performance and processing characteristics of entries in Maine Frozen Product Trial 1, grown at Perham, Maine, 1977.

Selection	Yield over 2 ins. cwt./A	S.G.	Tuber Rating	Chip Color	French Fry Texture
CA46-11	437	63	3.3	6.0	2.7
CA55-24	391	68	3.7	6.0	3.0
CD03-4	364	65	3.5	6.3	2.3
CD08-21	262	68	3.2	5.7	3.5
CD106-16	461	68	3.7	8.0	2.5
CD130-7R	336	72	3.5	6.0	3.0
CD137-5R	335	69	4.0	7.0	2.2
CD138-4R	385	62	3.5	8.0	1.7
CS7215-12	307	74	3.5	6.3	2.3
CS7216-6	427	67	2.5	7.0	2.8
CS7218-11	341	72	3.5	4.3	2.8
CS7285-10	385	62	3.5	7.3	2.0
CS7296-5	388	63	2.7	7.7	2.7
Campbell 12	428	66	3.5	7.7	2.0
Campbell 13	422	69	3.2	7.0	1.8
Kennebec	387	57	2.3	6.7	2.5
Raritan	289	73	2.0	8.3	2.5
R. Burbank	166	64	1.0	7.7	2.2
Superior	453	64	2.2	7.0	1.8
Wauseon	389	58	2.7	8.0	1.3
Mean	368	66	3.0	6.9	2.4
Bayes LSD 5%	42	4	0.6	0.8	0.8
CV%	8	4	12	7	21

Campbell Table 6. Field performance and processing characteristics of entries in Maine Frozen Product Trial 2, grown at Perham, Maine, 1977.

Selection	Yield over 2 ins. cwt./A	S.G.	Tuber Rating	Chip Color	French Fry Texture
CS7306-12R	377	64	3.3	9.3	1.7
CS7309-11	416	59	3.0	6.0	2.5
CS7322-49	368	62	2.0	8.3	1.5
CS7333-23	364	65	3.2	7.3	3.2
CS7355-3R	251	67	2.0	8.0	2.7
CS7355-8R	326	70	2.8	8.8	2.3
CS7355-17R	326	67	3.2	8.3	1.5
CS7355-21	364	70	2.5	6.0	3.3
CS7356-3	327	66	2.5	8.3	1.8
CS73128-2	351	68	2.5	4.3	3.5
CS73132-2	419	63	3.0	7.0	1.3
AF40-9c	360	55	3.2	5.8	1.2
AF197-2c	394	58	3.5	6.8	1.5
AF201-4c	370	57	3.3	9.3	1.2
Campbell 12	454	66	3.2	8.0	1.2
Kennebec	389	56	2.3	6.8	1.2
Raritan	328	73	2.5	8.0	2.7
R. Burbank	235	62	1.0	7.8	2.0
Superior	460	61	2.0	6.3	1.7
Wauseon	385	58	2.2	8.8	1.0
Mean	363	63	2.6	7.4	1.9
Bayes LSD 5%	52	5	0.6	1.1	0.6
CV%	9	5	16	10	20

Campbell Table 7. Field performance and processing characteristics of entries in Maine Chip Trial 1, grown at Perham, Me., 1977.

Selection	Yield over 2 ins. cwt./A	S.G.	Tuber Rating	Chip Color	French Fry Texture
BR7093-23	352	67	3.3	5.7	2.3
BR7108-2	364	66	2.3	7.7	2.2
CC06-5	355	70	3.3	7.0	2.7
CC54-8	292	70	2.3	7.7	2.2
CD23-1	344	64	3.5	6.3	2.0
CD34-2	326	69	2.2	7.0	1.8
CS7221-7	333	65	2.5	6.3	2.2
CS7232-4	347	65	2.6	3.0	2.7
CS7232-7	412	63	3.3	6.0	1.8
CS7232-25	317	67	1.6	7.3	2.7
CS7236-2	359	67	2.2	7.0	2.8
CS7294-10	308	68	2.5	4.3	3.2
Campbell 11	352	70	3.2	6.3	2.3
Campbell 13	414	66	2.7	8.3	1.7
Kennebec	403	58	1.8	7.0	1.5
Norchip	311	72	1.7	4.7	2.5
Superior	438	65	2.0	7.0	2.0
Wauseon	375	60	2.5	9.0	1.3
Mean	356	66	2.6	6.5	2.2
Bayes LSD 5%	63	4	0.5	0.9	1.3
CV%	9	4	12	9	27

Campbell Table 8. Field performance and processing characteristics of entries in Maine Chip Trial 2, grown at Perham, Me., 1977.

Selection	Yield over 2 ins. cwt./A	S.G.	Tuber Rating	Chip Color	French Fry Texture
CD67-2R	337	74	2.0	7.3	2.3
CS7311-7	386	61	2.8	6.0	2.0
CS7397-1	362	61	2.8	5.0	3.2
CS7398-13	374	73	2.8	5.7	3.2
CS7402-8	353	59	2.0	8.0	2.2
CS7420-1	315	72	2.5	4.7	4.0
CS7477-3	279	64	2.2	6.3	2.5
CS7478-1	316	62	2.8	5.7	2.0
AF24-33C	333	60	2.2	8.7	1.5
AF201-10C	400	59	3.2	6.7	2.5
AF297-1C	401	65	2.0	7.7	2.0
Campbell 11	348	66	2.8	6.3	3.3
Campbell 13	468	66	2.7	7.3	1.7
Norland	393	61	3.3	7.0	2.3
Kennebec	415	61	2.0	7.0	2.3
Superior	461	67	2.0	7.0	2.3
Wauseon	414	62	2.0	8.3	1.3
Mean	372	64	2.4	6.6	2.4
Bayes LSD 5%	38	0.5	0.6	0.9	0.7
CV%	7	5	14	9	19

New Jersey

Melvin R. Henninger

Potato Variety Evaluation

Table 1, Experiment Nos. 1, 2, 3, and 4 were conducted at the Vegetable Research Farm near New Brunswick on a well-drained loam. These plots were single row, 3' wide and 24' long with four replications. They were all planted April 11 as randomized block designs and harvested as follows: Experiment No. 1 - August 2 early; Experiment No. 2 - August 16 med-early; Experiment No. 3 - August 30 med-late; Experiment No. 4 - September 13 late.

Experiment No. 5 was conducted on the Johnson Bros. farm in South Jersey on a moderately well-drained loamy soil. These plots were double rows, 3' wide and 12' long and planted on April 19 as a randomized block design and harvested August 9 med-early.

All data in Table 2 is from an observational trial conducted at the Rutgers Research and Development Center in South Jersey on a loamy sand. These plots were not replicated and were single rows 3' wide and 12' long, planted April 7 and harvested August 23.

Commercial cultural practices were used on all experiments. Irrigation was used to supplement normal rainfall. Specific gravities were determined by the air and water method.

Many seedlings were tested at both locations and several harvest dates. To evaluate each seedling at all locations, they are listed in the table in numerical order with the experiment number identifying the location and harvest date.

Key to Ratings System

Plant Type: 1=decumbent poor canopy; 2=decumbent mod. canopy; 3=decumbent good canopy; 4=spreading poor canopy; 5=spreading mod. canopy; 6=spreading good canopy; 7=erect poor canopy; 8=erect mod. canopy; 9=erect good canopy.
Plant Size: 9=very large; 1=very small.
Plant Appearance: 9=excellent; 1=poor.
Air Pollution: 0=dead; 1, 2, 3, 4=decreasing appearance of plants with all leaves showing symptom; 5=most leaves with symptom but plant still appears good; 6,7,8=decreasing percent of foliar symptom; 9=no symptom.
Maturity: 0=very early; 9=very late.
Tuber Color: 0=white; 1=buff; 2=tan; 3=net; 4=russet; 5=pink; 7=lt. russet; 8=russet; 9=h. russet.
Tuber Shape: 0=round; 1=rd. flat; 2=oblong; 3=oblong-flat; 4=round-oblong; 5=blocky; 6=long; 7=long-flat; 8=oblong-long; 9=long-cylindrical.
Tuber Conformation: 0=poor; 9=excellent.
Second Growth, Growth Crack, Hollow Heart, Heat Necrosis: 1=very severe; 9=none.
Chip Color: 1=very light; 5=borderline; 6=too dark; 9=very dark. Each chip color reading represents one chipping date starting immediately after harvest and continuing approximately at weekly intervals.

New Jersey Table 1. Data from five potato variety trials grown at three locations in New Jersey, 1977.

Plant Data				Tuber Data												
Type	Size	Appear.	Air Pollution Maturity	Color	Shape	Conf.	Sec. Gr.	Gr. Cr.	H. Heart	Necrosis	Exp. No.	Seedling	Yield over 1-7/8" cwt./A	Specific Gravity	Percent of Tubers over 1-7/8"	Percent of Tubers over 2-1/2"	Chip Color
8	8	8	8 5	3	0	8	6	9	9	1	4	B8443-12	344	68	90	55	
5	6	7	8 6	3	0	8	7	9	9	6	4	B8459-5	355	62	90	43	
6	7	7	7 2	3	0	8	8	7	8	6	4	B8459-6	326	71	95	76	
6	8	8	7 4	3	0	7	4	9	9	9	4	B8462-1	402	63	89	46	
6	7	8	4 4	1	1	7	8	9	9	8	2	B8477-4	368	76	95	66	322
5	5	4	5 1	0	0	9	8	9	8	7	4	B8480-3	274	64	94	49	
9	8	8	8 7	0	0	7	7	8	9	9	4	B8497-36	399	65	95	77	
5	7	6	5 6	2	5	8	8	9	7	6	2	B8498-9	369	64	95	77	333
9	8	8	7 6	0	0	7	8	8	9	6	2	B8500-27	379	73	86	61	256
8	9	8	8 3	0	0	7	7	9	9	8	4	B8501-10	450	72	96	66	
5	6	5	4 3	0	5	7	7	9	8	8	2	B8514-13	282	57	92	58	235
9	8	8	7 1	0	0	8	7	9	9	6	4	B8514-18	402	63	96	73	
4	5	4	5 5	8	3	6	8	9	9	8	2	B8528-4	310	68	92	57	255
7	5	6	3 2	8	8	5	8	8	9	9	5	B8530-9	204	68	94	51	3333
6	6	7	5 6	3	2	6	6	9	8	8	2	B8540-7	337	64	88	44	266
5	6	6	4 6	1	0	7	8	9	9	9	2	B8542-10	334	73	91	43	455
5	6	7	2 2	0	0	8	7	8	9	8	5	B8543-9	331	73	92	64	1124
5	6	6	4 3	7	9	6	5	9	9	9	2	B8545-18	237	64	71	11	566
6	8	8	3 4	1	5	7	8	9	8	7	2	B8575-5	448	59	96	80	335
6	8	9	4 4	1	1	6	7	8	9	8	2	B8581-1	310	65	92	51	232
8	6	7	8 0	3	2	8	7	9	9	5	4	B8590-11	299	56	94	56	
7	7	6	7 7	1	5	8	8	9	9	7	2	B8598-5	282	55	94	76	335
8	7	7	1 1	1	0	7	9	9	9	9	5	B8598-8	314	63	97	82	2344
8	7	8	3 4	1	0	8	9	9	9	8	5	B8598-9	321	85	95	68	2223
8	8	7	2 3	3	5	8	9	8	9	9	2	B8599-42	387	58	96	84	335
9	8	8	5 6	1	5	7	8	8	9	9	2	B8599-45	380	64	96	77	457
7	4	6	6 5	7	3	5	7	8	9	8	3	AF11-12C	260	57	87	33	68
5	5	5	6 6	1	2	6	7	8	8	8	3	AF32-8	510	52	94	67	56
2	4	7	4 5	1	5	7	6	8	5	7	3	AF40-9C	331	60	94	63	55
6	7	8	2 2	2	1	7	8	9	7	9	5	AF40-9C	359	66	94	67	1212
9	9	9	5 6	0	5	7	6	7	9	7	3	AF84-4	527	67	95	74	55
5	7	7	7 8	0	0	6	4	7	8	5	3	AF173-2	485	52	95	69	56
6	8	9	6 6	0	3	5	7	7	9	9	3	AF186-2	478	65	95	57	54
4	7	6	5 4	8	8	3	6	3	8	6	3	AF193-4	408	49	94	56	67
9	8	9	7 7	0	1	6	8	8	9	9	3	AF197-7	551	65	93	63	66
5	7	8	4 3	3	3	2	4	9	9	9	5	B6503-2	426	75	96	78	1112
6	7	8	6 4	0	5	9	9	9	9	9	1	B6969-2	344	60	97	75	

New Jersey Table 1. (cont'd.)

Plant Data Type	Plant Data Size	Plant Data Appear.	Air Pollution Maturity	Tuber Data Color	Tuber Data Shape	Tuber Data Conf.	Tuber Data Sec. Gr.	Tuber Data Gr. Cr.	Tuber Data H. Heart	Tuber Data Necrosis	Exp. No.	Seedling	Yield over 1-7/8" cwt./A	Specific Gravity	Percent of Tubers over 1-7/8"	Percent of Tubers over 2-1/2"	Chip Color
5	7	6	3 3	0	0	8	9	8	8	9	2	B6969-2	406	58	96	79	233
5	6	6	8 2	0	0	8	8	9	9	9	4	B6969-2	369	60	96	70	
5	6	7	4 4	0	0	9	9	9	9	9	5	B6969-2	402	67	95	74	2333
6	8	8	5 6	0	1	5	8	9	9	9	5	B6987-29	406	70	96	77	1122
6	7	8	5 4	1	0	7	9	8	8	9	5	B7516-7	426	72	96	76	2233
6	8	7	5 6	0	0	8	9	9	9	9	5	B7516-9	469	67	95	70	2332
7	4	3	6 7	0	0	6	5	9	9	9	1	B7621-9	165	54	94	52	
8	5	7	7 7	8	6	5	4	9	9	9	1	B7636-15	217	53	92	44	
7	7	6	5 6	8	5	7	9	9	9	9	1	B7685-8	230	58	95	53	
8	5	8	6 6	8	2	6	6	9	9	9	1	B7711-11	265	54	96	60	
4	6	7	4 6	7	2	6	6	9	9	8	1	B7715-11	290	56	92	64	
7	9	8	4 6	4	0	8	8	9	9	9	5	B7744-5	373	63	93	46	3444
7	7	8	8 3	3	6	5	7	4	9	6	4	B7845-4	380	71	90	33	
5	6	6	4 5	0	7	5	8	9	9	7	2	B7845-26	381	62	95	74	357
6	9	8	5 5	0	0	7	8	9	6	8	2	B7865-12	421	62	93	67	546
8	6	7	4 4	1	0	6	8	8	9	9	1	B7872-7	356	54	98	86	
6	8	8	4 4	0	5	7	8	8	8	7	2	B7897-3	378	64	94	63	566
3	8	7	5 5	1	0	7	6	8	7	8	2	B7905-2	356	59	91	66	956
6	9	8	8 3	0	0	8	7	9	9	9	4	B8086-3	439	60	95	71	
6	7	8	6 8	0	5	7	9	9	9	9	5	B8086-3	449	71	94	64	3344
8	7	8	2 2	1	0	7	8	8	7	7	2	B8123-12	346	59	96	85	333
8	7	7	5 5	0	0	6	3	9	9	8	1	B8148-4	264	63	91	58	
5	7	7	5 5	3	3	4	6	8	9	8	2	B8261-3	445	59	93	57	566
9	8	9	4 4	2	6	5	5	9	9	7	1	B8316-3	329	56	86	46	
6	6	7	4 4	8	6	6	5	9	9	9	2	B8338-7	250	65	92	56	335
6	8	8	4 4	3	6	7	9	8	9	9	2	B8356-1	328	58	95	65	466
6	7	6	2 4	0	0	7	7	9	8	9	2	B8424-4	298	74	87	57	232
8	7	7	5 6	0	5	7	7	9	9	8	2	B8424-10	422	59	92	69	455
8	6	7	7 2	0	0	8	9	8	9	8	4	B8424-11	294	53	99	90	
7	6	4	6 4	2	0	8	9	9	7	7	1	B8427-4	247	70	93	58	
7	7	4	3 7	0	0	5	6	9	9	8	2	B8429-1	228	62	88	51	446
8	7	8	4 4	1	0	7	9	9	8	8	2	B8433-4	380	59	97	79	547
8	7	7	3 5	0	0	8	8	9	9	8	2	B8443-5	388	64	96	81	233
8	8	8	4 4	0	8	4	2	7	8	7	3	AF200-6	564	46	95	55	88
8	9	8	5 5	0	4	6	6	9	8	9	3	AF201-3	564	56	96	72	68
8	9	7	7 7	1	4	7	8	9	8	8	3	AF205-9	570	69	96	68	34
5	5	7	5 7	0	0	5	7	8	9	9	3	AK-28	304	57	88	36	66

New Jersey Table 1. (cont'd.)

Plant Data				Tuber Data												
Type	Size	Appear.	Air Pollution	Maturity	Color	Shape	Conf.	Sec. Gr.	Gr. Cr.	H. Heart	Necrosis	Exp. No.	Seedling	Yield over 1-7/8" cwt./A	Specific Gravity	Percent of Tubers over 1-7/8"	Percent of Tubers over 2-1/2"	Chip Color
5	8	8	5	7	4	0	7	6	9	9	9	3	Alaska Red	252	54	76	21	68
9	8	7	6	6	0	0	7	6	7	9	9	3	BR7088-18	496	66	96	70	23
6	8	8	4	6	0	0	8	9	9	9	9	5	BR7088-18	389	77	94	68	3122
5	4	6	4	4	0	5	7	8	8	9	9	3	BR7093-20	314	63	98	81	35
5	6	6	1	1	0	1	5	9	9	9	9	5	BR7093-20	304	73	94	68	1222
8	7	9	6	7	0	5	7	6	9	9	8	3	BR7093-23	515	54	94	68	56
5	8	7	6	8	0	0	8	8	9	9	9	5	BR7093-23	376	68	89	50	2211
8	7	7	6	8	3	4	6	6	6	8	8	3	BR7103-1	519	65	96	73	76
6	8	8	5	6	2	2	7	8	9	9	8	5	BR7103-1	423	69	96	78	2333
6	6	8	6	7	3	3	3	4	2	8	8	3	C7232-6A	392	52	92	55	76
8	9	7	6	6	1	0	8	6	9	9	8	3	C7279-3A	519	54	93	65	66
8	7	8	7	8	0	0	7	6	7	8	4	3	C72107-13A	534	55	92	67	67
8	7	6	6	7	1	6	5	6	3	9	9	3	CA28-2	413	60	94	59	67
5	7	7	8	7	0	1	4	5	9	9	9	1	CA46-11	364	53	90	63	
5	7	8	7	8	0	2	6	7	9	8	9	3	CA46-11	474	67	96	70	76
5	8	8	4	7	0	2	5	9	9	9	9	5	CA46-11	428	68	94	59	2322
6	7	9	5	7	0	3	6	7	7	8	8	3	CA55-24	476	67	96	72	54
5	7	7	8	0	2	3	7	7	9	9	8	4	CA55-24	342	68	96	68	
9	9	8	3	2	2	2	8	8	8	9	7	5	CA55-24	382	74	95	67	2122
8	8	8	5	6	3	0	7	3	9	8	7	2	CC06-5	393	63	92	70	566
6	7	9	6	6	0	3	6	7	7	8	9	3	CC06-12	500	45	89	34	88
8	8	9	5	8	0	5	6	8	8	8	8	3	CC26-1A	495	70	94	57	63
5	9	8	6	7	0	3	5	7	9	9	9	5	CC26-1A	465	74	97	78	2323
8	7	8	8	8	0	2	6	5	5	9	8	3	CC53-8A	549	49	89	33	87
6	7	8	6	7	0	4	4	5	8	8	9	3	CC54-3A	554	56	96	58	56
7	6	6	5	7	2	5	7	8	9	9	8	2	CC54-8	296	75	96	71	245
9	5	8	6	7	0	4	5	5	7	8	9	3	CD08-29	518	45	94	66	88
7	7	7	6	6	1	2	7	6	7	8	8	3	CD34-2	384	64	87	46	33
8	9	8	8	2	3	2	8	7	9	9	9	4	CD106-16	414	68	95	62	
5	6	7	6	6	8	6	5	6	6	8	9	3	CD138-4R	530	55	92	54	88
6	7	8	5	5	3	5	8	7	9	9	6	3	CD139-9	392	67	95	76	55
2	5	7	4	2	2	0	9	9	9	9	8	5	CD139-9	378	73	94	65	1222
9	3	9	5	6	3	1	6	7	7	8	9	3	F67072	501	52	97	81	57
9	3	8	6	7	0	0	8	7	6	8	3	3	NY-59	388	55	94	68	77
5	7	7	5	5	8	9	6	8	3	8	8	3	W564-3A	578	57	94	57	79
6	7	8	5	5	8	4	6	7	7	9	9	3	W524-5	336	68	93	62	35
7	8	6	6	7	0	1	4	6	9	8	9	3	47156	328	55	92	55	57

New Jersey Table 1. (cont'd.)

Plant Data			Air Pollution	Maturity	Tuber Data							Exp. No.	Seedling	Yield over 1-7/8" cwt./A	Specific Gravity	Percent of Tubers over 1-7/8"	Percent of Tubers over 2-1/2"	Chip Color
Type	Size	Appear.			Color	Shape	Conf.	Sec. Gr.	Gr. Cr.	H. Heart	Necrosis							
9	8	8	8	7	0	1	7	6	8	9	9	4	Buckskin	379	64	94	61	
6	7	8	6	8	0	0	7	9	9	9	9	5	Buckskin	307	70	88	43	2322
6	8	8	6	5	3	0	8	9	8	8	6	1	Atlantic	369	76	96	69	
6	8	9	6	8	3	0	8	8	9	8	5	3	Atlantic	575	76	97	77	55
6	8	7	7	4	3	0	8	8	9	9	1	4	Atlantic	413	74	97	77	
9	9	9	5	6	3	0	8	9	9	8	7	5	Atlantic	473	79	95	58	2222
5	6	9	5	5	4	0	7	7	8	9	8	3	Batocke	559	57	95	72	67
7	8	5	6	7	0	0	5	4	9	9	9	3	Belleisle	377	60	92	57	77
4	2	8	7	6	1	5	8	9	9	8	9	1	Campbell-11	207	70	94	56	
6	7	8	4	4	1	5	7	9	8	8	9	2	Campbell-11	271	74	95	67	213
6	7	8	5	4	1	5	8	8	9	9	9	3	Campbell-11	419	72	96	82	33
6	7	8	8	0	1	5	8	8	8	9	8	4	Campbell-11	269	72	98	68	
5	7	8	3	3	1	5	8	8	9	9	9	5	Campbell-11	384	75	96	75	2121
6	7	8	6	3	0	5	6	7	7	8	8	3	Campbell-13	343	57	94	73	55
8	8	7	6	7	0	5	6	8	9	9	9	3	Hudson	496	70	98	85	56
6	8	7	8	8	0	0	5	6	7	9	9	4	Hudson	436	71	98	84	
6	9	9	8	9	0	5	6	7	9	9	9	5	Hudson	346	72	93	68	2345
5	6	6	7	7	0	0	7	7	9	9	9	1	Katahdin	217	51	91	56	
7	7	7	7	8	0	0	7	8	9	8	9	2	Katahdin	338	55	93	67	357
8	6	7	7	8	0	0	6	6	9	9	9	3	Katahdin	430	52	96	70	67
8	8	7	5	8	0	5	8	9	9	9	9	5	Katahdin	344	62	93	57	2324
9	8	9	7	8	0	2	6	5	9	7	8	3	Kennebec	512	56	94	65	66
9	9	9	5	8	0	4	6	7	9	9	9	5	Kennebec	377	68	92	55	1223
9	6	8	4	6	0	0	5	7	8	9	8	1	Norchip	290	67	92	46	
6	7	8	5	6	0	0	6	6	7	9	8	3	Norchip	522	65	95	66	23
6	8	8	8	4	0	0	6	7	8	9	8	4	Norchip	438	66	95	57	
9	9	8	5	6	0	0	6	7	9	9	9	5	Norchip	394	72	91	51	2222
9	9	8	6	7	2	2	7	5	9	9	8	2	Raritan	402	72	92	63	565
5	8	7	7	6	3	4	6	7	9	9	9	1	Superior	372	60	95	70	
9	8	8	5	3	3	4	6	7	9	9	8	2	Superior	361	62	95	73	566
5	8	8	6	5	3	4	7	7	7	9	9	3	Superior	516	61	98	79	55
9	8	9	7	1	3	4	7	7	9	9	9	4	Superior	357	60	96	70	
5	8	8	5	5	3	4	7	8	9	9	9	5	Superior	448	68	96	64	2333
5	8	8	6	7	3	0	5	7	9	9	9	5	Late Sup.	354	70	92	58	3322
5	6	5	4	5	5	0	5	5	8	8	9	3	Tabique	436	62	94	69	65
8	7	7	6	6	1	0	9	7	9	9	8	3	Wischip	384	59	93	52	25

New Jersey Table 2. Observational trial grown in South Jersey, 1977.

Seedling	Total Yield cwt/A	Air Poll.	Maturity	Tuber Data: Color	Shape	Conf.	Sec. Gr.	Gr. Cr.	H. Heart	Necrosis
B6503-2	271	4	4	1	3	5	7	9	2	9
B6969-2	344	6	4	0	5	9	9	9	9	9
B6986-2	307	5	6	0	0	7	9	9	8	9
B6987-2	279	3	1	3	0	5	9	9	9	6
B6987-29	229	3	1	0	1	4	9	9	7	8
B6987-43	221	4	2	0	0	7	6	9	8	9
B6987-131	184	4	1	0	0	5	6	9	9	9
B6987-184	212	4	2	0	0	6	8	9	7	9
B7009-4	435	5	5	0	4	7	9	9	8	9
B7152-3	134	2	0	0	0	6	9	9	9	9
B7152-8	120	1	0	0	0	4	9	9	9	9
B7152-12	134	1	1	0	0	8	9	9	9	9
B7152-14	248	3	2	0	0	6	9	9	9	9
B7153-14	329	3	4	0	4	4	8	5	9	6
B7154-6	314	2	0	0	0	7	8	9	9	9
B7154-10	286	2	1	1	0	5	8	9	8	9
B7200-6	177	2	1	4	0	7	8	9	9	8
B7200-33	232	3	5	0	0	7	8	9	8	8
B7516-2	154	2	1	1	0	8	9	6	9	8
B7516-7	223	4	2	0	0	7	9	9	5	7
B7516-9	203	2	1	0	0	9	9	9	9	9
B7589-15	221	2	2	0	0	5	9	9	9	6
B7592-20	230	5	1	0	1	5	7	9	9	9
B7603-1	315	6	8	5	0	6	2	7	9	9
B7603-6	207	2	1	4	0	6	8	9	9	6
B7603-9	80	1	0	4	0	8	9	9	7	9
B7608-2	174	2	0	8	4	7	9	9	9	9
B7608-4	262	3	4	8	0	2	5	9	8	7
B7610-1	279	6	7	3	2	5	2	8	7	4
B7618-6	226	3	2	0	0	7	9	9	2	9
B7621-1	261	2	2	0	0	7	9	9	9	9
B7621-9	268	3	1	0	5	7	8	9	9	7
B7633-12	241	2	1	1	3	5	8	9	9	9
B7636-15	385	5	5	8	6	4	6	9	7	9
B7642-2	263	3	5	0	0	5	8	5	8	9
B7650-9	298	3	4	4	0	8	9	9	9	9
B7650-19	176	2	0	4	0	8	7	7	8	9
B7679-9	234	3	4	8	6	8	9	9	9	9
B7680-6	251	2	2	8	6	4	6	9	9	7
B7680-10	250	3	1	3	0	7	7	8	9	7
B7685-8	158	2	0	8	4	6	9	9	9	9
B7711-11	344	3	2	8	6	6	7	9	9	9
B7715-11	268	3	2	8	4	7	9	9	8	9
B7744-4	229	2	1	0	1	5	9	7	2	6
B7744-5	428	3	4	4	0	7	6	9	9	9
B7763-3	221	4	4	0	0	2	9	9	8	9
B7768-4	272	3	1	3	0	6	5	6	5	8
B7805-1	348	4	2	0	0	8	8	9	7	7
B7805-6	210	1	0	0	0	7	6	9	9	9
B7832-2	217	1	0	0	0	8	9	9	7	9
B7838-5	283	5	4	0	0	6	9	9	9	7
B7839-2	252	3	1	4	0	7	9	9	8	9
B7839-7	240	2	1	4	0	7	9	9	9	9
B7840-2	262	2	1	0	5	2	9	9	7	9
B7845-4	327	4	5	0	6	4	7	9	7	8
B7845-26	268	2	1	0	6	7	8	9	5	5
B7848-2	313	3	1	0	2	7	9	9	8	6
B7849-5	205	2	0	8	2	7	9	9	9	9
B7860-14	310	3	4	0	5	7	6	9	9	6
B7860-20	298	6	8	0	0	7	7	9	7	5
B7860-23	306	6	8	0	5	6	1	9	9	9
B7865-12	274	1	1	0	0	8	9	9	7	8
B7866-3	278	5	7	0	5	7	6	6	9	9
B7871-5	263	3	1	0	2	5	9	3	9	8
B7872-7	262	3	4	0	0	7	9	6	9	8
B7878-1	189	4	8	3	0	8	9	9	9	9
B7897-3	299	2	3	0	0	8	8	7	9	6
B7905-2	223	2	2	0	0	8	8	9	7	9
B7913-1	251	3	2	0	0	3	6	3	9	9
B7918-3	209	2	3	0	6	6	6	9	9	9
B8086-3	301	5	6	1	0	8	9	9	9	9
B8087-6	256	5	5	0	0	8	9	9	9	9
B8091-8	324	5	8	1	5	8	9	9	9	8
B8108-3	279	3	2	0	0	8	9	6	5	9
B8123-3	232	3	4	0	2	6	9	9	7	8
B8123-11	265	5	8	0	2	4	6	9	8	9
B8123-12	147	2	1	1	0	7	8	7	9	6
B8125-5	339	6	7	0	5	3	8	9	4	9
B8131-1	317	4	5	0	0	4	5	9	8	5
B8132-4	217	2	0	0	0	5	9	9	7	8
B8148-4	234	2	0	0	0	6	8	9	9	8
B8210-1	184	5	8	8	6	6	2	9	9	6
B8247-1	151	3	1	0	0	8	8	9	9	9
B8261-3	246	3	1	0	2	7	8	7	9	9

New Jersey Table 2. (cont'd.)

Seedling	Total Yield cwt/A	Air Poll.	Maturity	Tuber Data: Color	Shape	Conf.	Sec. Gr.	Gr. Cr.	H. Heart	Necrosis
B8302-5	232	2	1	0	0	6	6	4	9	9
B8308-5	152	1	0	3	0	8	9	7	9	5
B8316-3	176	2	2	3	9	7	7	9	9	6
B8338-7	172	3	1	8	2	7	9	9	9	9
B8356-1	232	4	2	7	2	6	9	9	9	8
B8375-1	246	1	0	4	0	7	9	9	9	9
B8375-3	223	1	1	0	0	9	9	9	9	9
B8375-7	127	1	0	0	0	8	9	9	9	9
B8377-2	231	3	6	8	6	7	7	9	8	9
B8392-6	196	4	1	0	0	7	7	9	7	8
B8392-7	215	3	3	1	0	6	9	9	7	7
B8395-3	248	4	8	0	0	6	2	9	8	9
B8423-5	231	5	3	0	0	6	9	6	9	9
B8424-4	209	3	2	0	0	7	9	9	6	8
B8424-10	352	3	5	0	5	7	9	8	9	8
B8424-11	269	4	4	1	0	9	9	7	9	8
B8424-14	266	3	1	0	0	8	9	9	8	7
B8427-4	242	3	3	3	0	8	9	9	2	5
B8427-8	298	6	7	3	0	8	9	9	8	9
B8427-11	267	5	5	3	0	8	9	9	7	8
B8428-1	216	2	1	3	0	8	9	8	9	9
B8428-8	230	2	0	0	0	8	7	9	9	9
B8429-1	341	6	8	0	0	6	8	6	9	9
B8430-3	171	1	0	8	6	7	8	9	7	9
B8433-4	274	3	1	1	0	7	8	9	9	8
B8434-11	278	6	9	0	0	8	9	9	9	9
B8434-15	203	2	0	0	0	8	9	9	7	9
B8435-17	237	4	7	0	0	7	7	9	9	9
B8443-5	388	3	2	0	0	8	8	9	9	8
B8443-12	251	5	4	0	0	8	7	9	9	3
B8459-2	263	2	1	0	0	5	6	9	9	8
B8459-5	275	4	3	0	0	8	7	9	6	7
B8459-6	236	5	1	0	0	6	9	9	2	7
B8462-1	328	5	3	3	5	7	6	9	9	9
B8477-4	320	5	3	1	0	7	9	9	7	9
B8477-8	127	1	1	1	0	8	9	9	9	9
B8477-10	229	3	0	3	0	7	9	9	9	9
B8477-11	140	4	2	3	0	6	9	9	5	9
B8477-12	288	3	1	0	1	7	9	9	9	9
B8480-3	234	4	5	1	0	9	8	9	9	5
B8486-1	200	3	3	0	0	7	9	9	7	9
B8490-4	284	4	4	3	0	6	9	9	9	4
B8490-5	247	6	9	3	2	6	8	9	8	9
B8491-1	362	5	8	3	0	5	3	9	9	7
B8491-6	394	4	6	0	0	8	8	9	9	6
B8491-7	212	2	3	0	0	6	9	9	9	2
B8491-17	208	4	4	1	1	7	9	9	9	4
B8491-19	190	2	3	1	0	8	8	9	9	7
B8491-24	332	4	5	0	0	7	9	9	9	9
B8491-25	227	5	1	0	0	5	6	9	9	8
B8491-42	280	4	4	1	0	7	7	9	9	8
B8497-36	290	6	7	0	5	6	8	7	9	8
B8498-9	174	1	0	2	0	7	8	9	5	9
B8500-27	355	6	5	0	0	7	7	9	9	6
B8501-10	360	5	3	3	0	8	8	9	9	9
B8509-15	270	5	7	1	0	7	8	9	9	7
B8514-13	213	3	0	0	0	5	7	9	6	7
B8514-18	279	2	1	0	5	7	7	7	9	7
B8527-4	138	1	1	9	2	8	9	9	9	9
B8528-4	231	3	1	7	8	7	8	9	9	9
B8530-4	202	2	3	8	1	8	9	9	9	9
B8530-9	109	4	4	8	6	7	6	9	9	9
B8540-7	204	2	1	1	0	8	8	9	9	9
B8542-10	324	3	1	3	0	8	7	9	9	9
B8542-22	293	4	4	0	0	8	6	9	9	9
B8543-9	219	2	1	0	5	8	7	7	9	8
B8545-18	194	3	2	8	6	7	3	9	9	9
B8575-5	290	3	2	1	5	7	8	9	9	7
B8579-1	227	3	1	1	4	5	6	8	9	9
B8581-1	217	3	4	0	0	9	9	9	7	9
B8590-11	227	3	2	3	2	8	9	9	9	3
B8598-5	286	5	8	3	5	8	8	9	9	6
B8598-8	222	4	4	1	5	7	8	9	9	9
B8598-9	259	5	6	3	4	7	7	9	9	7
B8599-18	159	2	2	3	0	8	5	9	9	8
B8599-40	222	4	2	3	0	8	9	9	9	9
B8599-42	207	3	4	3	0	8	8	7	9	9
B8599-45	270	2	1	0	0	6	4	9	9	9
B8615-2	362	5	5	0	0	5	5	9	9	8
B8616-7	208	1	0	1	4	8	9	9	9	9
B8680-4	385	7	7	0	0	8	9	9	9	5
B8683-5	254	3	1	0	0	8	9	9	9	5
B8685-5	333	4	7	0	0	8	9	5	9	2
B8687-4	274	2	2	3	0	7	9	9	8	1

New Jersey Table 2. (cont'd.)

Seedling	Total Yield cwt/A	Air Poll.	Maturity	Tuber Data: Color	Shape	Conf.	Sec. Gr.	Gr. Cr.	H. Heart	Necrosis
B8687-10	325	4	5	2	0	7	9	9	2	9
B8687-16	256	2	3	1	5	8	5	9	9	4
B8687-22	218	3	2	3	0	8	9	9	9	7
B8687-23	309	3	2	1	0	7	8	9	9	6
B8688-2	326	3	4	2	4	8	9	7	8	9
B8689-5	213	2	1	1	4	5	9	9	9	8
B8689-6	209	2	1	0	0	4	5	9	9	9
B8690-2	212	3	1	3	0	6	9	9	7	6
B8690-6	202	3	1	3	0	7	9	9	9	9
B8690-7	287	4	5	3	0	7	8	9	9	5
B8690-8	129	2	0	0	0	8	9	9	9	9
B8690-12	269	5	5	3	5	8	8	9	6	7
B8690-13	213	2	1	1	5	8	9	9	9	8
B8690-17	249	2	2	3	2	6	8	9	9	9
B8691-3	224	2	0	0	3	3	8	9	9	9
B8691-13	348	3	2	0	2	7	6	9	9	9
B8692-3	305	4	6	3	0	6	7	9	9	7
B8692-6	276	4	5	1	0	7	8	9	8	7
B8692-12	264	4	3	1	0	8	9	9	9	6
B8692-14	161	1	0	0	0	8	7	9	9	9
B8693-4	141	1	0	8	6	7	9	9	9	9
B8695-5	272	3	3	3	0	5	6	9	9	6
B8697-29	250	4	1	0	2	5	7	9	9	9
B8697-34	337	6	3	3	2	7	8	8	9	9
B8704-9	307	4	3	3	6	8	8	9	8	8
B8706-7	335	6	7	3	0	8	6	9	9	9
B8706-8	251	5	3	3	0	8	9	9	9	6
B8707-1	228	3	0	0	0	9	6	9	8	8
B8710-1	360	3	3	0	0	4	6	9	9	8
B8710-11	354	3	1	0	2	5	9	9	6	9
B8710-16	234	3	1	0	0	7	9	9	6	7
B8710-17	190	2	0	8	2	7	8	9	9	9
B8710-19	245	2	1	3	0	7	6	9	9	7
B8711-3	329	4	1	1	0	8	8	6	9	2
B8712-1	241	3	1	0	0	8	9	6	8	9
B8713-5	403	5	7	0	0	7	8	9	9	5
B8713-21	310	5	7	0	1	6	8	7	4	2
B8713-24	360	4	6	3	0	6	3	9	9	4
B8715-3	341	3	1	0	0	8	7	9	7	7
B8715-13	368	3	1	0	4	7	9	5	9	8
B8715-20	331	3	1	0	0	7	7	5	7	5
B8715-22	183	2	0	0	0	7	9	9	9	6
B8720-2	216	2	0	0	0	8	6	6	9	9
B8735-3	271	4	5	0	0	8	6	9	8	9
B8740-1	247	5	1	0	0	7	6	7	8	9
B8745-1	190	3	1	0	0	5	9	9	9	9
B8751-1	275	4	5	3	5	8	9	9	8	6
B8751-6	201	3	3	3	0	9	9	9	9	9
B8755-3	249	4	2	3	4	6	9	7	2	3
B8757-2	147	1	0	0	2	8	9	9	9	9
B8757-7	348	5	7	0	5	6	6	9	9	8
B8758-2	247	3	1	0	4	6	7	7	9	8
B8761-2	291	4	3	3	0	9	9	9	7	6
B8763-14	247	4	3	0	2	4	5	9	9	4
B8767-2	298	4	3	0	0	8	9	9	5	6
B8769-5	194	2	0	0	0	8	9	9	8	8
B8771-2	277	7	5	0	1	5	7	9	9	5
B8771-5	300	5	5	1	5	7	9	9	5	8
B8771-6	208	3	1	0	0	6	9	9	9	7
B8771-7	333	6	8	0	1	3	8	9	8	9
B8773-19	312	4	2	0	0	5	9	9	7	6
B8773-23	414	6	9	0	5	7	8	7	7	7
B8777-7	340	5	6	1	0	8	9	9	5	7
B8778-1	228	3	1	4	0	6	9	6	5	7
B8779-1	125	1	0	0	0	8	9	9	9	8
B8780-3	174	2	0	3	4	7	9	9	9	9
B8782-6	356	7	9	0	0	6	3	9	9	9
B8783-1	257	3	2	0	0	8	9	9	9	8
B8783-6	179	2	2	3	0	9	9	9	9	7
B8783-8	241	5	5	0	0	8	9	9	9	1
B8787-8	175	1	0	0	1	5	9	7	9	9
B8788-2	241	2	1	0	0	7	8	9	9	9
B8794-6	232	3	7	3	6	7	8	9	5	6
B8794-7	294	3	1	3	0	7	9	8	5	8
B8798-3	232	2	1	0	4	7	8	9	8	5
B8798-10	183	3	2	0	0	8	9	9	9	8
B8798-16	224	3	2	1	0	8	9	9	7	6
B8798-18	218	3	3	0	0	8	9	7	5	3
B8798-20	247	4	4	0	0	8	6	9	8	9
B8799-8	99	1	0	0	0	9	9	9	9	9
B8799-13	248	4	5	3	2	6	6	7	7	9
B8799-16	219	2	1	0	0	8	8	9	9	9
B8800-3	326	4	2	3	0	7	8	9	2	7
B8803-1	188	1	0	2	0	8	9	9	8	9

New Jersey Table 2. (cont'd.)

Seedling	Total Yield cwt/A	Air Poll.	Maturity	Tuber Data: Color	Shape	Conf.	Spec. Gr.	Gr. Cr.	H. Heart	Necrosis
B8812-15	246	1	0	0	0	5	8	7	7	9
B8820-4	238	2	0	1	0	9	9	9	8	5
B8822-9	195	1	0	8	2	8	9	9	5	9
B8822-25	165	2	0	0	0	8	9	9	9	9
B8822-29	186	1	0	3	6	7	9	6	7	7
B8824-3	301	5	4	3	0	6	6	9	7	1
B8824-7	232	2	1	8	6	7	9	6	8	9
B8824-18	373	4	5	8	6	3	6	9	7	2
B8827-3	189	1	1	3	0	8	6	9	9	6
B8832-3	257	2	1	2	1	3	0	9	9	8
B8833-6	172	2	1	7	2	6	9	9	9	9
B8847-5	250	3	1	8	6	6	6	9	9	9
B8848-2	309	6	6	3	2	6	4	9	7	2
B8849-1	337	4	5	8	6	4	7	9	8	5
B8851-9	208	2	0	7	6	5	9	9	9	9
B8852-1	184	2	1	7	6	6	8	9	8	9
B8853-1	134	1	0	7	9	7	7	9	9	9
B8853-7	147	1	0	8	6	5	6	7	9	9
B8860-3	226	2	2	8	9	7	8	7	9	9
B8870-2	331	5	7	0	0	7	5	9	6	4
B8877-1	234	3	3	0	0	5	3	8	9	8
B8879-1	229	3	3	3	0	5	6	6	9	9
B8881-5	217	2	1	8	1	8	6	8	9	7
B8881-6	123	1	0	7	0	7	6	9	9	9
B8881-8	124	2	2	0	1	6	9	6	9	9
B8881-10	238	3	1	0	2	5	5	9	9	9
B8881-16	219	2	1	0	0	7	5	9	9	9
B8881-17	104	2	2	8	0	8	8	9	9	9
B8883-1	309	4	4	8	0	7	2	9	9	7
B8884-7	279	4	5	3	2	6	7	9	9	9
B8887-1	205	2	1	1	0	8	6	7	9	6
B8898-1	200	3	1	0	0	7	6	9	9	9
B8898-3	153	3	1	0	0	8	9	9	9	9
B8899-1	262	5	7	0	5	8	8	9	9	4
B8899-2	320	4	7	1	5	7	9	9	9	6
B8899-13	332	5	7	1	0	8	9	9	8	9
B8904-4	299	4	5	3	8	5	6	9	7	6
B8907-3	280	3	3	3	0	8	7	9	9	3
B8907-4	362	4	5	3	0	9	8	6	9	9
B8907-8	372	4	5	3	4	6	9	9	9	7
B8908-3	235	4	2	7	2	7	9	9	9	9
B8911-4	170	2	4	1	6	3	6	9	4	9
B8918-2	320	6	7	8	6	7	9	7	7	8
B8921-1	165	1	0	7	6	7	8	9	9	9
B8922-6	237	2	1	3	2	8	6	9	9	9
B8922-15	206	1	0	8	6	7	9	9	7	8
B8926-1	283	5	6	7	6	2	4	9	9	9
B8931-2	257	1	0	0	8	3	6	9	9	9
B8932-2	233	1	0	0	2	9	9	9	8	9
B8934-2	247	1	1	8	6	7	7	7	9	9
B8934-3	227	1	1	8	6	5	9	7	9	9
B8934-4	271	2	4	8	2	4	7	9	9	6
B8934-5	370	1	0	7	6	5	4	6	9	9
B8937-2	272	3	1	1	0	7	9	9	9	9
B8937-3	239	1	1	8	9	7	9	9	9	9
B8937-6	383	5	6	8	1	7	7	7	9	9
B8939-17	262	2	0	3	2	7	5	9	8	8
B8943-2	271	3	1	0	2	6	6	9	7	9
B8943-4	180	3	2	8	6	8	9	9	9	9
B8945-1	304	4	6	3	0	8	8	9	5	5
B8947-1	300	3	2	8	6	6	9	9	9	9
B8947-2	326	4	3	8	6	4	7	6	9	6
B8947-3	277	3	5	0	0	7	7	9	9	9
B8949-1	337	5	3	9	6	8	9	9	9	9
B8949-4	350	3	6	0	2	7	9	9	9	6
B8950-3	271	2	1	3	6	4	6	6	8	9
B8950-4	242	2	1	0	9	4	7	9	9	9
B8958-3	248	4	6	3	2	8	9	9	9	8
B8963-1	167	2	1	3	4	2	8	9	9	9
B8965-1	275	6	0	0	1	5	5	9	9	7
B8965-2	268	5	3	0	0	3	7	8	4	3
B8966-3	223	4	1	8	2	7	8	5	9	8
B8968-1	248	3	2	3	6	6	9	9	9	9
B8972-1	232	3	1	8	6	7	8	9	8	9
B8977-1	251	3	2	1	4	8	8	5	7	5
AF11-12C	290	4	1	3	8	5	6	7	9	8
AF32-8	288	3	2	0	1	6	9	9	9	8
AF40-9C	243	4	2	1	4	6	7	9	3	8
AF84-4	261	6	5	0	1	4	6	6	9	4
AF173-2	313	4	1	1	1	7	7	9	5	7
AF186-2	277	3	2	0	2	5	8	9	9	9
AF193-4	206	1	1	7	2	8	9	7	7	8
AF197-7	310	5	6	0	3	4	8	9	9	7
AF200-6	224	3	2	0	6	3	4	9	9	8

New Jersey Table 2. (cont'd.)

Seedling	Total Yield cwt/A	Air Poll.	Maturity	Tuber Data: Color	Shape	Conf.	Sec. Gr.	Gr. Cr.	H. Heart	Necrosis
AF201-3	226	4	3	0	2	6	8	9	9	9
AF201-4C	228	3	3	1	5	7	9	7	9	9
AF201-10C	242	2	1	1	5	7	9	9	9	9
AF205-9	259	4	2	0	3	6	6	9	9	8
AK28	316	5	4	0	6	4	3	9	7	9
AK Red	277	4	5	4	4	6	6	9	9	9
BR7088-18	190	3	1	1	4	6	8	9	9	8
BR7093-20	218	2	2	1	0	6	9	9	7	9
BR7093-23	267	3	3	0	0	7	7	7	9	7
BR7103-1	262	5	5	1	0	7	6	9	9	7
C7215-12	239	4	4	2	4	7	9	9	6	9
C7220-10	255	2	0	0	0	7	9	9	9	9
C7221-7	241	3	1	0	0	8	9	9	8	9
C7227-28	242	4	2	1	1	5	9	9	9	7
C7227-32	244	3	1	0	0	5	8	9	9	9
C7232-4	169	1	0	1	4	5	8	9	9	9
C7232-6A	146	3	1	3	6	3	6	7	9	9
C7232-25	228	6	5	0	0	7	9	8	9	9
C7236-2	213	3	1	1	0	6	9	9	9	9
C7279-3A	278	3	1	0	0	5	7	7	9	9
C7285-10	242	2	2	1	0	8	8	6	7	9
C7294-10	243	5	2	1	0	4	7	9	8	5
C72107-13A	251	3	1	1	0	8	2	9	9	4
CA28-2	356	5	6	1	6	4	3	9	9	9
CA46-11	240	2	1	0	2	5	7	9	9	9
CA55-24	226	2	1	2	2	8	7	9	6	9
CC06-5	279	4	3	1	4	3	4	9	5	6
CC06-12	374	5	4	0	0	6	6	9	5	9
CC26-1A	355	4	3	1	1	6	9	9	6	8
CC53-8A	458	6	7	0	2	7	7	6	9	8
CC54-3A	270	5	4	3	1	4	7	9	9	9
CC54-8	202	4	4	1	0	9	8	9	7	9
CD03-4	203	2	0	0	0	8	9	7	9	9
CD08-21	234	5	3	2	3	5	8	9	9	6
CD08-29	346	3	1	1	0	8	5	9	9	9
CD34-2	215	3	3	1	2	7	8	9	7	8
CD70-22	231	5	5	0	4	7	6	9	8	9
CD106-16	341	4	5	1	2	8	6	9	7	9
CD138-4R	272	5	4	7	9	5	8	9	9	8
CD139-9	287	5	5	1	5	9	7	9	7	4
F67072	255	3	1	3	4	7	7	9	6	9
NY-59	296	7	3	1	6	7	8	9	9	2
W564-3A	401	5	3	8	6	7	8	9	7	8
W524-5A	262	5	5	8	2	5	7	9	9	9
47156	234	6	7	0	1	5	8	9	5	9
Buckskin	364	7	8	0	0	6	7	9	9	9
8 GV-5	313	6	7	0	0	8	4	9	9	9
8 NO-3	293	5	4	0	0	6	7	9	9	8
8 NW-8	357	5	6	0	0	6	2	9	9	8
8 OD-2	207	3	3	1	4	5	7	9	6	8
8 OT-2	399	5	7	0	0	8	7	9	7	8
8 PO-1	313	4	5	3	1	7	8	6	6	8
8 SA-1	452	6	7	0	1	4	7	9	9	9
8 TV-2	529	6	5	0	1	6	3	7	9	8
8 TW-2	375	5	5	3	3	6	8	9	6	7
8 UP-6	346	4	5	1	0	7	7	9	9	8
8 XM-5	324	4	4	0	1	6	8	9	9	6
8 YW-1	463	7	7	0	3	6	7	9	7	8
8 YY-1	405	6	7	0	3	5	7	9	6	7
8 YY-3	389	5	6	0	1	5	8	9	7	9
9 CM-1	304	6	5	0	3	6	7	7	7	8
9 CN-3	231	2	1	3	1	7	7	9	9	9
9 FH-1	255	3	2	0	0	7	8	5	9	9
Atlantic	324	5	5	3	0	8	9	9	4	3
Batocke	271	3	2	4	0	8	9	9	9	8
Belleisle	352	6	7	1	4	6	6	9	7	8
Campbell-11	190	4	4	1	0	7	9	9	6	8
Campbell-13	171	2	1	0	0	8	8	9	8	8
Chippewa	338	5	4	0	1	6	6	9	9	8
Hudson	441	6	5	0	0	6	8	9	6	8
Katahdin	346	3	6	0	0	8	8	9	9	9
Kennebec	343	6	7	0	2	5	3	9	9	8
Norchip	308	4	5	0	0	6	6	9	9	8
Raritan	305	5	7	1	2	6	6	9	6	9
Superior	279	4	2	3	4	6	8	9	9	9
Late Sup.	319	7	6	3	4	4	5	9	9	9
Tabique	212	2	1	0	0	7	7	9	9	9
Wischip	247	3	1	3	0	8	8	9	9	8

NEW YORK (LONG ISLAND)

R. C. Cetas

Evaluation of Potato Cultivars and Breeding Lines for Scab Resistance on Long Island - 1977

Sixty-three cultivars and breeding lines were evaluated for scab resistance in 10-hill plots replicated twice, 75 lines in 10-hill nonreplicated plots and 175 lines in 2-hill nonreplicated plots. Seed of the cultivars and breeding lines for the replicated trial were obtained from several sources, including Cornell University, NE-107 Potato Improvement Project, Frito-Lay, and USDA. All entries in the 2-hill and 10-hill nonreplicated trials were breeding lines from the Cornell potato breeding project.

The Haven loam soil was naturally infested with *Streptomyces scabies* and has been maintained at a pH of 5.8 to about 6.5 by annual applications of 500-1000 pounds of lime each spring. The2- and 10-hill single-row plots were hand planted on April 21 and each was paired with one of the Chippewa cultivar, which was planted by machine. The hand planted seedpieces were spaced 12 inches apart in the row and the machine planted ones nine inches. All rows were 34 inches apart. The 8-16-8 fertilizer (2000 lb/A) was applied as the seed furrows were opened with a two-row potato planter and Temik 15G (33 lb/A in the seed furrow) as the seed furrows were closed with a pair of tractor-mounted disc hillers. Weeds were controlled with normal cultivation and a broadcast application of Eptam 10G (50 lb/A) on May 27. Foliar sprays were applied as needed for insect and disease control. Approximately one inch of water was applied by overhead sprinkler irrigation on June 20 to supplement normal rainfall. Tubers were harvested on September 10.

Forty tubers, or all tubers if less than 40 were available, from each 10-hill plot were washed and examined for scab lesions. Each tuber was scored 0 (no lesions) to 4 (deep pits) for type of scab present and 0 (no scab) to 5 (61% or more) for surface area covered by scab lesions. These values were converted to individual tuber indices that ranged from 0 (no scab) to 140 (61% or more of surface area covered by deep pitted scab). The scab index for each plot was calculated by dividing the sum of the individual tuber indices by the number of tubers examined. The index for each cultivar and breeding line in the replicated trial was determined by calculating the average of the two plots. A scab index ratio was calculated for each cultivar and breeding line by dividing the cultivar or breeding line index by the index of their respectively paired Chippewa plots and multiplying the quotient by 100. The ratio allows one to determine quickly which cultivars or breeding lines were more or less resistant to scab than Chippewa and to compare one breeding line or cultivar with another.

The cultivars and breeding lines that appeared to be highly resistant in the replicated trial were Nooksack, Norchip, Norgold Russet, Russet Burbank, Superior, New Superior, Targhee, Wischip, AF186-5, B6987-29, B7196-74, B7845-29, and WC330-1. (Table 1). Four of the 75 Cornell lines (Q53-5, Q94-9, Q94-15, and Q183-5) included in the 10-hill nonreplicated trial appeared to be highly resistant to scab. Thirty-nine breeding lines included in the Cornell 2-hill nonreplicated trial were identified as being resistant to scab, also.

New York (Long Island) Table 1. Results of growing breeding lines and cultivars of potatoes in soils that were naturally infested with *Streptomyces scabies* at Riverhead, New York in 1977.

Cultivar or breeding line	Scab index			Type of scab on affected tubers				Percentage of tubers with scab	
				Majority of lesions		Average lesions			
	Line	Chippewa	Ratio[1/]	Line	Chippewa	Line	Chippewa	Line	Chippewa
Atlantic	1.9	9.7	19.6	2	4	2.5	3.4	25.0	55.0
Bake King	12.2	9.2	132.6	4	4	3.5	3.3	57.5	61.2
Centenial Russet	2.7	9.8	27.6	2	4	2.4	3.5	41.2	51.2
Hudson	9.2	13.2	69.7	3	4	2.8	3.5	65.0	56.2
Katahdin	14.1	14.1	100.0	3	4	3.1	3.4	71.2	71.2
Katahdin	11.2	20.0	56.0	3	4	2.9	3.4	58.8	71.2
Kennebec	4.4	14.0	31.4	2	4	2.4	3.7	55.0	57.5
Nooksack	0.17	15.1	1.1	2	4	2.0	3.6	5.2	60.0
Norchip	0.08	12.5	0.6	2	4	1.0	3.4	3.8	57.5
Norgold Russet	0.0	19.4	0.0	0	4	0.0	3.7	0.0	68.8
Russet Burbank	0.23	14.6	1.6	2	4	2.0	3.2	9.1	65.0
Superior	0.02	12.5	0.2	2	4	1.0	3.4	1.7	63.8
New Superior	0.02	17.4	0.1	0	3-4	1.0	3.4	1.2	61.2
Targhee	0.0	9.6	0.0	0	4	0.0	3.3	0.0	56.2
Tobique	0.4	7.6	52.6	2	4	2.0	3.3	11.2	47.5
Wischip	0.0	15.6	0.0	0	4	0.0	3.5	0.0	70.0
NY-59	4.0	16.8	23.8	3	4	3.0	3.2	41.2	76.2
NY-61	5.0	13.2	37.9	2	4	2.4	3.2	56.2	63.8
L521-5	2.8	15.6	18.0	2	3	2.8	3.4	33.8	75.0
FL-96	0.6	10.0	5.9	2	4	2.0	2.8	20.0	76.2
FL-162	1.1	11.7	9.4	2	4	2.1	3.2	30.0	77.5
FL-311	1.0	26.3	3.8	2	4	2.0	3.5	33.5	68.8
FL-657	9.3	14.8	62.8	2	4	2.5	3.3	65.0	67.5
AF41-2	2.2	26.1	8.4	2	4	2.1	3.0	51.2	87.5
AF186-2	3.8	18.4	20.7	2	4	2.5	3.5	47.5	56.2
AF186-5	0.1	10.6	1.0	2	4	2.5	3.6	3.8	57.5
AF200-6	4.1	12.5	32.8	3	4	2.9	3.2	43.8	60.0
AF201-3	5.3	17.0	31.2	2	4	3.0	3.6	61.2	65.0
BR6862-2	3.0	10.7	28.0	2	3	2.2	3.3	33.8	57.5
BR6863-3	10.4	20.8	50.0	3	4	2.9	3.6	68.8	72.5

(New York (Long Island) Table 1 continued on next page)

Cultivar or breeding line	Scab index			Type of scab on affected tubers				Percentage of tubers with scab	
				Majority of lesions		Average lesions			
	Line	Chippewa	Ratio 1/	Line	Chippewa	Line	Chippewa	Line	Chippewa
BR7093-23	3.8	13.1	29.0	2	3	2.4	3.4	42.5	67.5
B6503-2	13.2	22.9	57.6	4	4	3.0	3.7	62.5	71.2
B6529-12	2.0	35.1	5.7	2	4	2.1	3.4	36.2	86.2
B6987-29	0.15	20.6	0.7	2	4	2.0	3.8	6.2	71.2
B6987-184	6.8	13.2	51.5	2	4	2.8	3.2	51.2	62.5
B7147-8	1.0	7.8	12.8	2	3	2.0	3.4	27.5	53.8
B7152-3	0.7	16.0	4.4	2	4	2.1	3.6	21.2	66.2
B7152-12	2.6	18.9	13.8	2	4	2.2	3.2	47.5	81.2
B7154-6	4.8	13.8	34.8	2	4	2.4	3.4	58.8	62.5
B7154-10	1.3	13.8	9.4	2	4	2.0	3.2	27.5	73.8
B7592-1	1.3	10.6	12.3	2	3	2.1	3.0	32.5	68.8
B7196-74	0.3	33.5	0.9	3	4	2.5	3.6	6.4	81.2
B7516-2	1.1	35.5	3.1	2	4	2.2	3.6	28.4	78.8
B7516-9	1.0	15.2	6.6	2	4	2.1	3.2	27.5	85.0
B7545-4	13.2	17.3	76.0	2	4	2.0	3.5	40.0	68.8
B7583-6	2.8	21.2	13.2	2	4	2.3	3.6	35.0	71.2
B7603-1	12.0	28.4	42.3	3	4	2.7	3.6	73.8	83.8
B7603-6	0.57	8.7	6.6	2	4	2.0	3.2	16.2	67.5
B7650-19	3.4	12.8	26.6	2	4	2.3	3.3	46.2	66.2
B7680-10	0.4	18.9	2.1	2	4	1.2	3.2	7.2	76.2
B7839-7	1.4	9.4	14.9	2	4	2.4	3.2	26.2	60.0
B7845-29	0.3	18.5	1.6	2	4	2.0	3.7	11.2	66.2
B8490-4	0.7	9.1	7.7	2	4	2.2	2.4	18.8	62.5
B8490-5	1.7	13.7	12.4	2	4	2.1	3.5	36.2	63.8
B8491-6	4.6	18.7	24.6	2	4	2.4	3.3	46.2	82.5
B8491-17	3.7	12.7	29.1	3	4	2.8	3.6	35.0	57.5
B8491-24	5.0	25.0	20.0	2	4	2.3	3.7	42.5	76.2
C7279-3A	0.7	19.6	3.6	2	4	2.2	3.5	16.2	80.0
C72107-13A	13.0	7.3	178.1	3	3	3.0	3.2	61.2	51.2
CC53-8A	0.4	11.1	3.6	2	4	2.1	3.6	10.0	53.8
CC54-3A	0.6	15.8	3.8	2	4	2.2	3.5	15.0	70.0
WC330-1	0.0	10.4	0.0	0	4	0.0	3.7	0.0	48.8
6CX6	6.2	11.6	53.4	2	4	2.8	3.0	50.0	61.2
B7957-5	1.5	27.0	5.6	2	4	2.2	3.6	31.2	80.0

1/ Ratio = Index for cultivar or line divided by index for paired Chippewa multiplied by 100.

NEW YORK STATE (LONG ISLAND)

R. S. Greider and J. B. Sieczka

Results of Potato Variety Trials on Long Island

1977

Three replicated variety evaluation experiments were conducted at the Long Island Horticultural Research Laboroaty at Riverhead, New York, by the Vegetable Crops Department, Cornell University and Suffolk County Cooperative Extension. The experiments were: 1) a russet trial with eight entries, 2) a round white trial with 18 entries and 3) a trial of golden nematode resistant lines.

All trials were planted on Haven Loam soil. Planting dates were April 14 and 15. Experimental design for all experiments was a randomized complete block with 4 replications. Plot size was two rows by 25 feet. Between row spacing was 34" and within row spacing was 9" for all trials. Fertilization practices consisted of 2,000 pounds of 8-16-8 per acre.

Rainfall during April, May, June and July was below normal and supplemental irrigation was necessary. Temperatures during this period were also above normal, particularly in mid-July. In fact, during the period between July 16 and 21 daily temperatures exceeded 90° on each of the six days. As a result heat sprouting and jelly-end rot caused considerable cullage in several lines, particularly those selections from Maine. Regrowth was further promoted by warm, moist conditions in August and early September.

Maturity readings were taken and vines were killed on September 13. Harvest was conducted September 27 and 28.

Long Island Russet Variety Trial

Three named russet varieties and four numbered lines were evaluated along with B6529-12, a white skinned clone. None of the selections had the "ideal baker" characteristics. Low percent marketable yield was a problem with Russet Burbank and Targhee. Centennial Russet, B7845-29 and WC330-1 had low specific gravities. Line B7147-8 had inadequate total yield. Line B7583-6 shows most promise but has a tendency to produce blocky, irregular shaped tubers.

Long Island Round White Variety Trial

Six named varieties and 12 numbered lines were evaluated to determine their adaptability to Long Island growing conditions and for suitability on the round white, general-purpose potato market. Superior was chosen as the early season standard and Katahdin as the late maturity standard.

Those in the Superior season which deserve further testing include AF41-2, AF186-5, and CC7279-3A. These three had equal or better marketable yields than Superior and had better conformation.

In the medium and late season category, those which compared favorably with Katahdin include Buckskin (Pennsylvania line 6CX6), AF201-3, and BR7093-23.

Lines B7845-4, CC53-8A, CC54-3A, and Late Superior were high in total yield but marketable yield was below 80%. Tubers of B7845-4 tend to be long and a percentage of the tubers which may have been an acceptable weight were mechanically sized as less than two inches. Superior and Late Superior produced similar marketable yields. Tobique, AF186-2, AF200-6, C72107-13A and B6503-2 had comparatively low yielding ability and poor tuber conformation.

Long Island Golden Nematode Resistant Trial

Five named varieties and six numbered breeding lines, all round whites with golden nematode resistance, were evaluated to determine their adaptibility to Long Island conditions. Katahdin was included as a standard. In this trial, generally the more attractive (e.g. high potential consumer appeal) clones were those with lower yields. High yielding lines were generally rough in appearance. The exception is Katahdin which unquestionably out-performed all other entries.

Promising early-maturing selections include B7805-1, Campbell 11, Campbell 13 and Peconic. All of these were very attractive but rather low yielding. (These lines are to be compared to Superior in 1978.) Line NY 61 sets heavily and produces a large number of medium size tubers. Hudson yield was down in this trial although appearance was good. Lines B6987-29 and B6987-184 were high yielding but rough in appearance. Line NY62 was also high yielding but had moderately-deep to deep eyes. Atlantic and NY59 are not adapted to Long Island due to incidence of internal necrosis.

Long Island Table 1, Russet Variety Trial. 1977

Variety	Yield (cwt/A) Total	US No.1 >2"	% of Total Yield US No.1 2-3 1/2	>3 1/2	Mis[1]	Sun.	Specific Gravity	Hollow Heart[2]	Internal Necrosis	Vine Mat[3]	Appearance[4]
B6529-12	514	445	63	24	6	4	1.059	1.2	6.0	9	7.9
B7583-6	490	444	77	14	5	0	1.076	3.2	1.5	2	7.7
Targhee	494	375	68	9	14	0	1.071	1.7	0.5	0	7.7
WC330-1	391	341	76	11	6	1	1.061	0.5	0.2	10	8.5
Centennial Russet	351	319	82	9	2	0	1.062	0.5	0.2	10	8.5
B7845-29	341	286	80	4	6	0	1.063	4.0	0.0	9	8.4
B7147-8	275	239	82	5	3	0	1.069	0.7	0.5	10	8.6
Russet Burbank	474	194	36	5	49	0	1.072	1.2	0.0	3	5.1

1/ Includes heat sprouting and jelly end rot.

2/ Average number of tubers with hollow heart or internal necrosis of 20 tubers cut per replication.

3/ Based on a scale of 0 to 10, 0=green, 10=dead.

4/ Based on a scale of 1 to 9, 1=extremely rough tubers, 9=smooth, attractive tubers.

Long Island Table 2, Round White Trial. 1977

Variety	Yield (cwt/A) Total	Yield (cwt/A) US No.1 >2"	% of Total Yield US No. 1 2-3 1/2	% of Total Yield US No. 1 >3 1/2	% of Total Yield Mis.[1]	% of Total Yield Sun.	Specific Gravity	Hollow Heart[2]	Internal Necrosis[2]	Vine Mat.[3]	Appearance[4]
BR7093-23	550	497	77	14	3	1	1.062	0.0	0.0	2	6.7
Katahdin	519	492	73	22	2	1	1.062	0.8	0.3	4	7.5
AF201-3	521	479	67	25	5	1	1.062	3.3	1.0	8	6.7
CC53-8A	539	434	76	4	7	5	1.057	0.8	0.3	6	6.2
CC54-3A	530	426	75	5	9	3	1.060	1.0	0.3	0	6.0
Buckskin	461	410	80	9	3	3	1.068	0.8	0.0	3	7.0
AF186-5	446	402	81	9	2	2	1.068	0.0	0.0	9	6.6
AF41-2	429	371	79	8	5	1	1.062	0.0	0.0	9	6.4
Superior	415	359	73	14	4	1	1.066	0.0	0.0	10	5.2
B7845-4	442	358	79	2	4	1	1.066	1.0	0.0	9	7.5
C7279-3A	401	355	79	10	4	1	1.061	0.0	1.0	10	7.7
New Superior	458	350	67	9	19	1	1.063	0.3	0.0	7	5.0
Tobique	417	345	68	15	11	1	1.071	0.0	0.0	9	5.7
B6503-2	402	342	74	11	10	1	1.069	0.8	0.5	10	6.4
AF186-2	401	340	84	3	6	1	1.078	0.3	0.0	9	6.2
C72107-13A	407	331	76	6	2	8	1.057	0.0	0.0	8	6.7
AF200-6	380	314	78	5	11	1	1.063	1.0	1.0	10	6.5
Russet Burbank	431	186	37	7	42	0	1.068	0.8	0.3	0	5.0

1/ See Table 1, footnote 1.

2/ See Table 1, footnote 2.

3/ See Table 1, footnote 3.

4/ See Table 1, footnote 4.

Long Island Table 3, Golden Nematode Resistant Lines. 1977

Variety	Yield (cwt/A) Total	US No.1 >2"	% of Total Yield US No.1 2-3 1/2	>3 1/2	Mis[1]	Sun.	Specific Gravity	Hollow Heart[2]	Internal Necrosis[2]	Vine Mat[3]	Appearance[4]
Katahdin	443	421	77	18	1	0	1.061	0.2	0.5	6	7.3
NY 62	444	395	83	7	2	1	1.067	0.0	1.5	5	6.2
B6987-29	458	388	73	12	11	1	1.071	0.0	0.5	2	5.5
B6987-184	420	375	85	4	5	1	1.081	1.2	0.0	1	6.5
Atlantic	399	371	80	13	2	0	1.075	1.0	7.0	7	7.0
NY 59	425	365	71	15	8	0	1.072	0.0	5.2	2	6.7
Hudson	383	347	69	21	2	1	1.064	0.2	0.2	5	7.5
NY 61	401	342	79	7	4	0	1.066	0.0	0.0	6	7.0
B7805-1	353	326	73	19	3	1	1.066	2.0	3.7	8	9.0
Peconic	336	313	87	6	1	0	1.074	0.2	2.0	9	7.2
Campbell 13	329	307	72	22	3	0	1.071	1.0	0.5	10	8.0
Campbell 11	304	292	87	9	1	0	1.072	0.2	0.2	10	7.7

1/ See Table 1, footnote 1.

2/ Average number of tubers with hollow heart or internal necrosis of 10 tubers cut per replication.

3/ See Table 1, footnote 3.

4/ See Table 1, footnote 4.

NEW YORK STATE

Joseph B. Sieczka

Results of Potato Variety Trials in Upstate New York

1976-1977

Eight replicated variety trials were conducted in upstate New York by the Vegetable Crops Department in 1976. Five were conducted at the Thompson Vegetable Research Farm in Freeville, N.Y. on a Howard gravelly loam. Three were conducted in Steuben County. One of these was on a mineral soil (Bath-Mardin association) and the other two were on muck soil in Arkport, N.Y. Both locations in Steuben were hampered by very heavy rainfall in the latter part of the growing season. The Arkport muck area was especially hard hit with much of the commercial acreage left unharvested due to the excessive water. The experiments in Arkport were harvested but many of the plots had to be left. The data on yield and quality from these experiments are probably not a good indication of varietal potential.

Most of the varieties tested in upstate New York were also tested on Long Island. The performance of given lines were similar in both locations while the performance of other lines varied considerably by location.

Variety Trial I

Sixteen white skinned entries and two long russets were included in Variety Trial I (see Table 1). Eleven entries produced higher marketable yields than Katahdin. The top yielding clone was B7845-4. Tubers of this line are long to oblong, smooth, have shallow eyes and a lightly netted skin. Unfortunately a high percentage of the tubers cut were hollow. The Frito Lay line 657 produced high marketable yields of oblong to round shaped tubers. The tubers were irregularly shaped and had moderately deep eyes. The flesh of this line has a slight yellow cast. The Campbell line C7279-3A produced a high marketable yield of tubers that were equal in appearance to Katahdin. Another Campbell line CC53-8A produced the highest total yield in the experiment but had a substantial amount of scoreable defects. BR7093-23 also produced high total yield but many tubers had enlarged lenticels which detracted from the variety's appearance. The highest specific gravity was produced by AF186-2. Tubers of B6951-2 had a high appearance rating however yield was low.

Variety Trial II

Twelve entries were included in Variety Trial II. Eleven of these possess golden nematode resistance. Katahdin was used as the standard. Nine of the entries produced higher marketable yields than Katahdin. NY 61 tubers had the highest total and marketable yields. Tubers of this line are round, slightly irregular in shape, with moderately deep eyes and a smooth bright white skin with pink blotches located primarily near the eyes. Atlantic and its siblings, B6987-2, B6987-29, and B6987-184, produced good yields. However, hollow heart appeared to be a potential problem with Atlantic. Tubers of B6987-29 are

oblong, flat and irregular with moderately deep eyes. This line will be limited to the processing market because of its appearance. Tubers of P6-1 had a lower appearance rating than B6987-29. The most attractive tubers were produced by B7805-1. This clone tends to produce large, smooth shaped tubers which have shallow eyes and a bright white skin. Peconic also scored high in appearance eventhough the apical cluster of eyes was moderately deep. The sibling clones NY 59 and NY 61, and B6987-29 are very late maturing clones. The earliest maturing clone in the experiment was Campbell 13.

Variety Trial III

Five named varieties and 4 promising russet clones were included in Variety Trial III. Four clones produced marketable yields greater than 300 hundredweight per acre. These clones were virtually free from second growth although one clone, B7583-6, did have growth cracks. Centennial Russet produced the highest marketable yield and had the best appearance rating. Tubers of this line are mostly oblong, have shallow eyes and a heavily netted skin. WC330-1 is a long attractive russet with few defects. The specific gravity of this line and of B7845-29 is relatively low. B7583-6 tubers are oblong, blocky and slightly irregular in shape with shallow eyes and a nicely netted skin. B7147-8 produced long, slightly flattened tubers with shallow eyes and a very heavy russet skin. Low marketable yields were produced by Russet Burbank, Targhee, Nooksack, and Nampa. Hollow heart was a problem in B7845-29 and B7583-6.

Variety Trial IV

Six named varieties were evaluated in Variety Trial IV. The two red skinned entries produced the highest marketable yields. Chieftain had a slight edge in yield and appearance over Batoche, a new release from Canada. Both lines has similar size distribution. Batoche tubers had a deeper red skin color, higher specific gravity and deeper eyes than Chieftain. A selection of Superior referred to as "New Superior" produced more vigorous plants which matured later than the standard Superior. The total yield and specific gravity of "New Superior" were the highest in the experiment. The appearance rating of the standard Superior was slightly better than the new selection. The variety Oneida, released by Wisconsin, had a slightly better appearance than Katahdin. This variety produced tubers which are round to oblong, slightly irregular in shape with shallow eyes and a slightly scurfy white skin. Oneida matures slightly earlier than Katahdin.

Variety Trial V

Wet soil conditions prevented the harvest of one of the four replications planted in Steuben County. The performance of most of the clones planted was relatively good considering the very wet growing conditions. NY 61 produced the highest total and marketable yields. Specific gravity of this clone was higher than Kennebec and about the same as Atlantic and B6987-29. The highest specific gravity was produced by two Pennsylvania lines, 8TW2 and 8YW1. At Freeville, N.Y. 8TW2 showed a tendency toward hollow heart which was not observed in Steuben County. Lines having high appearance ratings were B6503-2, Campbell 11, 8YW1, B7147-8, and B7845-29.

Variety Trials on Muck Soil

The wet conditions referred to earlier were accentuated in the low lying mucklands. There yields and dry matter content were reduced. This was especially true of the russet entries. The white skinned clones that did well even under these adverse conditions were NY 61, FL 657, NY 59 and Buckskin. All the russet lines produced yields considered unacceptable.

Variety Trial VI

Forty six seedlings from the Cornell Breeding Program were evaluated at the Thompson Research Farm. These lines are in the early stages of development and twenty one were excluded from the program as a result of this years evaluation. The data contained in Table 8 are for the surviving lines.

Seed Source

Organically grown seed from Colorado of the varieties Norland and Norgold Russet were compared to commercially grown New York Certified Norlands. The results show that seed source did not affect the performance of the Norland variety. Varietal differences were noted between Norland and Norgold Russet in mean tuber weight, specific gravity and percent mishappen tubers.

1976 Storage Results

Chip color readings for entries stored at 50°F prior to frying were lighest for Snowchip, Campbell 11, Wischip, Atlantic, NY 61, CD08-21, K349-7, Campbell 13, and Kennebec. When stored at 45°F for most of the storage period with one month reconditioning at 60°F only Wischip produced chip color lighter than 50 on the Agtron meter. Clones that were virtually free of after-cooking darkening were Russet Burbank, Campbell 13, Wischip, NY 59, and NY 62. Considerable darkening was noted for clones CD08-21 and K349-7.

In the russet experiment B7583-6 produced light colored chips but tended to have some after-cooking darkening. Targhee had the most after-cooking darkening. Centennial Russet produced the darkest color chips. Only Atlantic and Wischip produced light color chips in the Arkport experiments in 1976.

Acknowledgements

Special thanks go to grower-cooperators who have provided time, land and equipment to conduct some of these experiments. The efforts Mr. Matt Reisen, Cooperative Extension Agent in Steuben County, has made in the establishment, harvest and evaluation of the Steuben County trials are also greatly appreciated, as is the assistance provided by individuals in the Vegetable Crops Department at Cornell. Last but not least the involvement of Jim Watts, Wise Foods, in the Steuben County experiment should be recognized.

Table 1. Variety Trial I. Freeville, N.Y. 1977

Variety[1/]	Yield (cwt/A) Total	Yield (cwt/A) US No.1 2-4"	% of Total Yield US No.1 2-3 1/2	% of Total Yield US No.1 3 1/2-4	% of Total Yield US No.1 >4	% of Total Yield Mis.	% of Total Yield Sun.	Specific Gravity	Hollow[2/] Heart	Appearance[3/]
B7845-4	509	392	74	3	0	7	11	1.072	6.5	7
FL657	452	389	53	33	2	3	8	1.064	1.5	5
C7279-3A	481	375	60	19	0	10	8	1.067	0.3	7
CC53-8A	562	365	54	11	1	11	23	1.068	1.0	6
AF201-3	434	352	64	17	1	5	8	1.068	1.5*	6
AF200-6	451	347	73	4	0	16	4	1.068	1.4	6
B6503-2	399	339	81	3	0	4	7	1.078	3.3	6
CC54-3A	485	334	63	10	0	4	11	1.077	1.5	6
CC26-1A	440	326	58	16	0	6	15	1.079	4.3	6
AF186-2	384	319	81	2	0	3	7	1.082	0.0	5
AF186-5	383	310	74	7	1	3	9	1.068	3.3	6
C72107-13A	378	302	65	15	0	5	11	1.066	1.3	7
Katahdin	424	301	47	24	1	1	21	1.066	6.0	7
Kennebec	516	299	47	12	0	15	23	1.072	2.0	5
Tobique	417	292	48	22	1	14	12	1.074	5.0	4
B6951-2	355	291	66	17	1	2	11	1.070	1.7	8
BR7093-23	508	279	44	12	0	1	16	1.069	4.0	6
Russet Burbank	319	185	56	2	0	33	2	1.077	2.0	5

1/ Planted May 12, 1977, between row spacing 36", 9" spacing for all clones except Russet Burbank which was 13", fertilizer applied at a rate of 1000 pounds of 15-15-15 in bands at time of planting, harvested September 15, 1977.

2/ Average number of tubers with hollow heart of ten tubers cut in each replication.

3/ Appearance rating based on a scale of 1 to 9; 9 is equivalent to smooth attractive appearing tubers, 1 is equivalent to extremely rough tubers.

*Solid brown centers were noted on the average of 0.5 tubers of the ten cut per replication.

Table 2. Variety Trial II. Golden Nematode Resistant Lines, Freeville, N.Y. 1977

Variety[1/]	Yield (cwt/A)		% of Total Yield					Specific Gravity	Hollow Heart[2/]	Appearance[3/]
	Total	US No.1 2-4"	US No. 1 2-3 1/2	US No. 1 3 1/2-4	US No. 1 >4	Mis.	Sun.			
NY 61	542	401	69	5	0	5	15	1.072	1.5	6.0
B6987-2	457	375	56	26	0	7	9	1.075	1.3	5.5
NY 62	464	367	51	28	2	1	16	1.071	0.5	6.0
Atlantic	495	361	50	23	6	9	7	1.089	6.8	6.5
B6987-29	432	359	66	17	1	10	5	1.079	1.5	4.8
Peconic	435	352	65	16	1	1	15	1.076	0.0	7.3
B7805-1	404	323	39	41	4	6	13	1.066	2.8	8.5
B6987-184	376	320	81	4	0	2	9	1.092	2.0	6.5
P 6-1	479	307	39	25	3	7	23	1.071	1.0	4.3
NY 59	421	307	36	37	8	2	14	1.070	3.0	6.3
Katahdin	411	300	44	30	2	2	20	1.066	3.5	6.0
Campbell 11	343	295	66	20	1	6	3	1.077	1.8	6.8
Hudson	411	259	51	12	0	12	19	1.067	1.3	5.8
Campbell 13	311	249	58	22	1	7	7	1.072	0.5	6.3

[1/] Planted May 12, 1977, harvested September 15 and 23, 1977. See footnote 1 in Table 1 for other pertinent information.

[2/] See Table 1, footnote 2.

[3/] See Table 1, footnote 3.

Table 3. Variety Trial III, Russets, Freeville, N.Y. 1977

Variety[1/]	Yield (cwt/A) Total	Yield (cwt/A) US No.1 2-4"	% of Total Yield US No.1 2-3 1/2	% of Total Yield US No.1 3 1/2-4	% of Total Yield US No.1 >4	% of Total Yield Mis.	% of Total Yield Sun.	Specific Gravity	Hollow Heart[2/]	Appearance[3/]
Centennial Russet	354	319	68	22	0	3	3	1.074	4.0	8.3
WC330-1	363	316	81	7	0	3	2	1.065	3.3	7.5
B7583-6	382	306	69	11	1	14	2	1.074	7.8	7.0
B7147-8	329	303	86	6	0	2	1	1.076	1.3	8.0
B7845-29	347	285	75	7	2	4	1	1.064	8.8	7.5
Russet Burbank	354	269	72	4	0	18	1	1.080	2.8	6.5
Targhee	296	204	67	2	0	17	1	1.078	3.0	7.3
Nooksack	198	158	73	6	0	13	1	1.079	1.5	7.8
Nampa	254	145	55	2	0	26	2	1.075	1.8	7.3

Table 4. Variety Trial IV. Freeville, N.Y. 1977

Variety[1/]	Yield (cwt/A) Total	Yield (cwt/A) US No.1 2-4"	% of Total Yield US No.1 2-3 1/2	% of Total Yield US No.1 3 1/4-4	% of Total Yield US No.1 >4	% of Total Yield Mis.	% of Total Yield Sun.	Specific Gravity	Hollow Heart[2/]	Appearance[3/]
Chieftain	489	432	59	30	1	5	1	1.065	0.3	7.8
Batoche	441	397	61	29	2	2	2	1.070	1.8	7.0
New Superior	520	385	55	19	0	7	12	1.075	0.0	5.5
Oneida	386	354	37	33	0	7	6	1.074	0.8	7.0
Katahdin	481	330	48	21	1	2	18	1.069	2.3	6.5
Superior	410	316	63	14	0	9	10	1.070	0.5	6.0

1/ Planted May 13, 1977, harvested September 23, 1977. See footnote 1, Table 1 for other pertinent information.

2/ See Table 1, footnote 2.

3/ See Table 1, footnote 3.

Table 5. Variety Trial V. Steuben County 1977

Variety[1/]	Yield (cwt/A) Total	>2"	%>2"	Specific Gravity	Appearance[2/]
NY 61	636	547	86	1.079	7.5
Kennebec	524	503	96	1.071	7.0
Atlantic	486	476	98	1.079	7.3
B6987-29	493	463	94	1.081	6.6
Buckskin	480	461	96	1.073	7.0
8YY1	475	460	97	1.080	7.5
B6503-2	479	455	95	1.075	8.0
B6987-2	443	426	96	1.074	7.3
8TW2	459	413	90	1.084	7.6
Campbell 11	418	397	95	1.077	8.0
B6987-184	426	396	93	1.083	7.0
Campbell 13	414	389	94	1.074	7.5
8YW1	373	339	91	1.084	8.0
8YY3	368	353	96	1.077	7.6
B7147-8	353	325	92	1.074	8.0
B7845-29	332	276	83	1.065	8.0

[1/] Planted May 17, 1977, 36" between row spacing, within row spacing 9", 144-288-144 applied at time of planting, harvested October 24, 1977.

[2/] See Table 1, footnote 3.

Table 6. Round White Trial on Muck Soil, Arkport, N.Y. 1977

Variety[1/]	Yield (cwt/A)		% of Total Yield			Specific
	Total	>2"	US No.1	Mis.	Sun.	Gravity
NY 61	409	335	82	0	10	1.066
FL657	313	288	92	0	4	1.056
NY 59	312	280	90	0	4	1.057
Buckskin	302	257	85	0	10	1.065
N6987-29	291	247	84	0	6	1.066
Campbell 11	290	244	85	0	12	1.067
Katahdin	292	242	83	0	11	1.054
CC26-1A	285	242	85	0	12	1.063
AF201-3	306	239	78	0	14	1.053
B6987-2	279	206	74	7	10	1.062
B6987-184	224	176	78	0	9	1.071

[1/] Planted May 19, 1977, within row spacing 9", 100-200-200 applied at time of planting, harvested October 7, 1977.

Table 7. Russet Trial on Muck Soil, Arkport, N.Y. 1977

Variety[1/]	Yield (cwt/A)		% of Total Yield			Specific
	Total	>2"	US No.1	Mis.	Sun.	Gravity
B7147-8	245	208	85	1	4	1.071
WC330-1	231	187	81	8	0	1.059
Centennial Russet	210	175	83	0	8	1.062
B7845-29	200	146	73	13	2	1.061
B7583-6	158	123	78	1	9	1.068
Nampa	147	91	62	10	2	1.065
Russet Burbank	133	84	63	25	0	1.058
Nooksack	101	79	78	3	5	1.066
Targhee	106	74	70	5	8	1.066

[1/] See Table 6, footnote 1.

Table 8. Cornell Q Series. Freeville, N.Y. 1977[1/]

Variety	Yield (cwt/A) Total	Yield (cwt/A) US No.1 2-4"	% of Total Yield: US No. 1 2-3 1/2	US No. 1 3 1/2-4	US No. 1 >4	Mis.	Sun.	Mean Tuber Wt (oz)	Specific Gravity	Hollow Heart[2/]	Appearance[3/]
94-18	516	410	60	19	0	5	12	6.9	1.084	3.8	6.8
112-5	482	381	53	26	1	6	12	8.2	1.067	0.0	6.8
54-26	524	378	55	17	1	11	12	7.5	1.071	0.8	7.0
155-3	484	370	54	23	1	4	14	6.2	1.070	1.5	6.8
54-22	434	343	57	22	1	7	8	5.8	1.071	0.0	7.5
94-25	404	338	47	37	1	4	10	6.1	1.067	0.5	6.5
54-15	551	355	38	22	1	13	15	7.4	1.065	3.8	6.0
151-24	411	331	56	24	0	7	6	6.4	1.060	1.3	7.3
53-5	500	321	46	18	0	5	18	7.2	1.070	3.3	5.5
54-11	424	312	48	26	2	2	14	5.8	1.069	(3.5)*	7.5
96-27	439	306	33	37	9	3	9	8.3	1.066	0.5	6.0
87-25	418	304	68	4	0	12	7	5.0	1.077	3.5	5.8
Katahdin	416	300	40	32	0	5	21	7.5	1.066	3.8	6.0
52-5	460	289	30	33	0	13	17	8.8	1.074	0.5	6.0
54-6	517	288	23	32	13	15	10	8.5	1.061	1.0	5.5
151-26	449	287	30	34	5	9	8	8.0	1.062	0.3	5.8
87-22	449	282	46	17	0	9	21	6.4	1.079	3.0	5.8
55-7	275	246	69	21	0	3	5	5.3	1.057	0.0	7.0
112-2	455	241	23	38	2	11	10	8.6	1.061	1.0	4.0
183-5	535	230	11	32	8	15	24	11.0	1.071	3.5	4.5
94-9	321	220	41	27	4	17	3	6.4	1.074	3.0	6.0
87-11	432	163	30	7	2	24	15	6.4	1.072	4.5	5.0

[1/] Planted 5/13/77, see Table 1, footnote 1 for other pertinent information.

[2/] See Table 1, footnote 2.

[3/] See Table 1, footnote 3.

* Internal necrosis

Table 9. Variety Trial I. Freeville, N.Y. 1976 Chip Color and Storage Results[1/]

Variety	Chip Color[2/] 1/12/77	Chip Color[2/] 4/4/77	After-cooking Darkening[3/] 2/11/77	Sprout Wt as % of Total Wt[4/] 3/25/77
M11-41 (NY 61)	51	41	4.7	3.0
AF41-2	48	43	4.4	7.5
Katahdin	48	43	4.4	4.0
L521-5 (NY 62)	40	--	5.0	1.8
L521-7 (NY 59)	34	--	4.9	1.5
Snowchip	56	46	4.1	4.8
Belleisle	45	40	4.0	4.5
Russet Burbank	43	41	4.9	1.5
Atlantic	51	46	4.5	4.3
Wischip	52	51	4.9	6.0
47156	46	43	4.8	2.5
CD08-21	51	48	3.6	1.0
BR6862-2 (Campbell 13)	50	42	5.0	5.3
BR6863-3 (Campbell 11)	55	46	4.7	2.8
BR7088-18	49	35	4.8	4.8
Kennebec	50	45	4.6	2.5
K349-7	51	48	3.6	0.8
B7160-4	44	41	4.1	10.0
$D_{(.05)}$ Tukey	(7)	(7)	(0.9)	

[1/] Varieties ranked in order of US No.1 (2-4") yields (see 1976 report).

[2/] Agtron M30 colorimeter readings. Standards for whole chips were discs 00 and 90 which were calibrated to give readings of 0 and 90 respectively. Minimum value for "generally acceptable color" for whole chips is about 45. Two slices of each of eighteen tubers per replication were fried in vegetable oil at 365°F. Samples fried on January 11th were stored at 50°F from time of harvest. Samples fried on April 4th were stored at 45° from time of harvest until March 4 when the temperature was raised to 60°F.

[3/] Five tubers of each of the three field replications were peeled, dipped in 0.5% sodium bisulfite; cooked for 7 minutes in an autoclave at 15 p.s.i. and rated from 1-5, where 1=severe after cooking darkening, 5=no darkening.

[4/] Stored at 50°F from time of harvest.

Table 10. Variety Trial II, Freeville, N.Y. 1976. Chip Color and Storage Results[1/]

Variety	Chip Color[2/] 1/19/77	Chip Color[2/] 4/5/77	After-cooking Darkening[3/] 2/10/77	Sprout Wt as % of Total Wt[4/] 3/25/77
B7583-6	50	41	4.1	3.0
Nooksack	48	30	4.9	0.0
Russet Burbank	47	36	5.0	2.0
Targhee	42	33	3.4	3.0
Nampa	45	30	5.0	1.0
Centennial Russet	36	15	5.0	4.8
B7147-8	48	44	4.8	8.0
$D_{(0.5)}$ Tukey	(4)	(7)	(0.6)	

Table 11. Variety Trial III. Freeville, N.Y. 1976. Chip Color and Storage Results[1/]

Variety	Chip Color[2/] 1/10/77	After-cooking Darkening[3/] 2/9/77	Sprout Wt as % of Total Wt[4/] 3/25/77
Chieftain	49	5.0	6.3
Norland	51	4.4	20.0
Bison	36	4.8	8.3
$D_{(.05)}$ Tukey	(7)	(0.5)	

[1/] See Table 10, footnote 1.

[2/] See Table 10, footnote 2.

[3/] See Table 10, footnote 3.

[4/] See Table 10, footnote 4.

Table 12. Arkport Russet and White (Muck Soil) 1976 Chip Color and Storage Results[1/]

Variety	Chip Color[2/] 2/4/77	After-cooking Darkening[3/] 2/10/77
Russet		
B7583-6	36	3.9
B7160-4	38	4.5
B7147-8	37	5.0
Russet Burbank	36	4.5
Nooksack	35	4.9
Nampa	33	5.0
Targhee	35	4.4
$D_{(.05)}$ Tukey	(7)	(0.8)
White		
L521-7 (NY 59)	24	5.0
Atlantic	41	4.9
Katahdin	30	4.6
Wischip	49	4.7
$D_{(.05)}$ Tukey	(6)	(0.4)

1/ See Table 10, footnote 1.

2/ See Table 10, footnote 2.

3/ See Table 10, footnote 3.

4/ See Table 10, footnote 4.

NEW YORK

R. L. Plaisted and H. D. Thurston[1]

New York Breeding Program

Crossing & Seedling Production. This year, 1171 lots of seed were produced; 11 were Tub x Tub crosses with emphasis on golden nematode resistance, 122 were (Tub x Adg) x Tub or (Adg x Tub) x Tub crosses to combine resistance to golden nematode (gn), PVX, PVY, and scab, 103 were crosses or open pollinated seed to advance the andigena populations, and 7 were crosses to S. berthaultii. Approximately 110,000 seedling tubers were produced. These are primarily Tub x Tub crosses segregating for gn resistance and several for chipping ability and scab resistance. Approximately 3600 seedling hill selections were made from 36,000 seedling hills. These are Tub x Tub crosses segregating for gn resistance and involve several clones provided us by other cooperators to this report. One hundred ninety-two selections were made of 725 first year - 15 hill plots. These are largely Adg x Tub or Tub x Adg hybrids segregating for gn, PVX, and PVY resistance. An additional 71 Adg x Adg 15 hill-plot selections were made from 309 plots which will be screened for chip color and PVX and PVY resistance. Ten selections were made of 31 clones in the replicated observation plots at Riverhead and Ithaca. These are all Tub x Tub hybrids with gn resistance.

Advanced Selections. The advanced clones which survived the 1977 selection are described in Table 1. NY59 is a cross between two N.Y. clones which was designated earlier as L521-7. It yields well, has good appearance, is resistant to the golden nematode, excellent for freedom from after cooking darkening, has exceptional field resistance to late blight, and is moderately resistant to Verticillium wilt. It is comparable to Katahdin in scab susceptability and the rate at which it becomes infected with leaf roll. It does not chip and has had internal necrosis comparable to Atlantic when grown on Long Island. It tends to set light and produce large tubers. The TGA content is less than Katahdin.

NY61 was M11-41 and is a cross between Wauseon and an andigena clone from the first cycle. That clone was from a cross between one clone from a Peruvian seed source and the other from a Colombian source. NY61 is resistant to the Golden nematode, chips well out of 50° storage, has field resistance to late blight comparable to Sebago, and for 3 years has shown resistance to leaf roll infection approaching that of Abnaki. It yields well but sets heavy, so much of the yield is between 2" and 3". Spacing wider than 9" might be advisable where small size is undesirable. It reacts to scab and Verticillium wilt like Katahdin and its after cooking darkening and specific gravity are generally better than Katahdin. The tubers have a bright white skin with a pink splash concentrated at the eye end. The pink fades in storage so that it is less discernable than at harvest time and is variable from one tuber to the next. It has a TGA content equal to Katahdin.

NY62 is a full sib of NY59. It is similar to NY59 in yield, golden nematode resistance, reaction to scab and Verticillium wilt, rate of infection by PLRV, TGA content, freedom from after cooking darkening, and poor chip color. It does not suffer from internal necrosis on Long Island.

[1] In cooperation with Anderson, Brodie, Cetas, Ewing, Fry, Jones, Sieczka, Semel, and Tingey.

Intermediate Selections. These clones are those with a Q designation representing the crosses made in 1972. The trials at Ithaca and Riverhead on upland soil and at Cato on muck included 59 clones plus Katahdin entered 3 or more times. The 22 clones which survived the selection based on yield trial and scab test results are presented in tables 2a-d. All but 3 are resistant to the golden nematode and 6 look promising for chip color. All are Tub x Tub type crosses.

New York Table 1. Advanced Clones Grown at Ithaca (6 repl), Riverhead (6 repl) and Cato (3 repl) in plots 2 rows wide by 20' long, planted at 9".

		Yield (cwt/A)									Late Bl.[g]		LR[h]	
		Total	>1 7/8	>2 1/4[a]	% > 2 1/4[a]	hht[b]	IN.[c]	App[d]	S.G.[e]	Scab[f]	9/2	9/7	1 yr.	2 yr.
Katahdin	Ith	404	371	328	81	.06	.01	4.5	1.067		92	93	68	
	Riv	473	453	402	85	0	.06	4.0		78(3)			16	
	Cato	409	401	357	87	0	0	4.5						
NY-59	Ith	438	408	362	83	.05	0	3.8	1.069		45	57	44	74
	Riv	536	514	463	86	0	.63	3.6		24(3)			54	
	Cato	404	397	352	87	0	0	3.8						
NY-61	Ith	468	390	227	49	0	0	4.2	1.073		77	85	15	57
	Riv	506	456	345	68	0	.08	3.9		38(2)			0	
	Cato	379	352	215	57	0	0	4.5						
NY-62	Ith	422	387	322	76	0	0	3.2	1.069		95	100	24	57
	Riv	548	530	463	84	0	.08	3.0		18(2)			48	
	Cato	343	319	241	70	0	.10	3.3						

a. At Ithaca, the grade was >2 1/2.
b. Hollow heart in largest tubers.
c. Internal necrosis.
d. Appearance score (1-5; 5 best).
e. Specific gravity.
f. Index relative to Chippewa and (predominant lesion type).
g. % defoliation under severe epiphytotic conditions.
h. % Leafroll (yrs. of exposure).

New York Table 2a. Yield of Selected Q clones.

	Yield in cwt/A											
	Ithaca				Riverhead				Cato			
	Total	>1 7/8	>2 1/2	% > 2 1/2	Total	>1 7/8	>2 1/4	% > 2 1/4	Total	>1 7/8	>2 1/4	% > 2 1/4
Katahdin	449	420	381	85	494	473	426	86	429	416	367	88
Q52-5	399	367	341	86	456	445	416	89	348	330	240	69
Q53-5	490	468	405	83	573	549	464	81				
Q54-6	454	423	385	85	485	438	374	77	407	407	345	85
Q54-11	507	465	434	86	417	397	343	82	505	490	319	63
Q54-15	459	428	364	79	569	541	496	87	485	437	392	81
Q54-22	423	392	341	81	428	415	377	88	365	356	294	81
Q54-26	523	483	370	71	478	442	380	79	365	345	221	61
Q55-7	396	367	292	74	378	352	293	78				
Q87-11	434	412	347	80	421	392	296	70	265	254	167	63
Q87-17	370	312	229	62	419	388	268	64				
Q87-22	371	347	283	76	468	453	416	89	378	365	247	65
Q87-25	384	350	246	64	399	381	299	75	287	265	156	54
Q94-9	363	339	282	78	427	395	299	70	232	221	163	70
Q94-18	417	385	293	70	427	395	299	70	303	278	174	58
Q94-25	378	347	290	77	413	398	360	87	368	361	298	81
Q96-27	415	385	341	82	415	403	342	82	343	338	283	83
Q112-2	499	478	423	85	512	495	441	86	303	296	249	82
Q112-5	386	364	319	83	358	339	286	80	383	356	316	82
Q151-24	287	261	211	74	279	251	195	70	301	285	225	75
Q151-26	388	362	330	85	358	336	295	82	332	319	269	81
Q155-3	360	334	277	77	369	346	281	76	383	374	321	84
Q183-5	465	443	415	89	525	511	466	89	269	263	234	87

New York Table 2b. Internal Defects of the Q Clones.

	Hollow Heart						Internal Necrosis					
	1976		1977				1976		1977			
	Ith	Riv	Ith	Riv	Riv-S	Cato	Ith	Riv	Ith	Riv	Riv-S	Cato
Katahdin	.06	.11	.06	.01	0	.07	.01	0	.01	0	0	0
Q52-5		0	.15	.25	0	0		0	0	.06	0	0
Q53-5		0	0	0	0			0	0	.06	.50	
Q54-6	.10		0	0	0	.10	0		0	0	0	0
Q54-11	0	0	0	.06	0	0	0	0	.05	0	0	0
Q54-15	0	0	.10	0	0	0	0	0	0	0	0	0
Q54-22		0	0	0	0	0		.10	0	.25	0	0
Q54-26	0	0	0	0	0	0	0	0	0	0	0	0
Q55-7		0	0	.06	0			0	0	0	0	
Q87-11	.10		.35	0	0	.20	0		0	0	.10	0
Q87-17	0		.40	0	0		0		0	0	.20	
Q87-22	.20		.20	0	0	.18	0		0	0	0	0
Q87-25			.10	.32	0	.10			0	0	0	0
Q94-9	0		0	0	0	0	.10		0	0	0	0
Q94-18		0	0	0	0	.20		0	.05	0	0	0
Q94-25		0	0	.06	0	0		0	0	0	0	0
Q96-27	0		0	0	0	0	0		0	0	.20	0
Q112-2	0		.15	0	0	0	0		.05	.19	0	0
Q112-5	0	0	0	0	0	0	0	0	0	0	0	0
Q151-24	0		.05	0	0	0	0		.05	0	0	0
Q151-26	.10	0	.05	0	0	0	0	0	.05	0	.10	0
Q155-3	.20		0	.06	.10	.10	0		0	.06	.10	0
Q183-5		0	.15	.10	0	.10		0	0	0	0	0

New York Table 2d. Appearance Rating & Disease Resistance of the Q Clones.

	External Appearance[1]				Disease Resistance				
					Scab[2]			Late Blight[4]	
	Ith (s)	Ith (EH)	Riv	Cato	index	type	GN[3]	8/25	9/2
Katahdin		4.0	3.8	4.6	78	3	S	5.3	7.2
Q52-5	4	2.5	3.4	3.8	87	2	R		
Q53-5	4	3.5	3.5		1	2	R	6	8
Q54-6	5	4.0	3.6	3.8	56	4	R	6	8
Q54-11	4	3.5	3.8	4.5	11	2	R		
Q54-15	4	4.8	4.8	4.5	61	4	R	6	8
Q54-22	5	4.2	4.1	4.5	16	3	R	8	9
Q54-26	4	3.2	3.8	3.0	48	4	R	8	9
Q55-7	5	5.0	3.9		15	2	R		
Q87-11	4	2.7	3.8	4.0	17	2	R	4	7
Q87-17	5	4.0	3.9		74	4	S		
Q87-22	5	3.0	2.9	4.5	3	2	R	5	7
Q87-25	4	3.8	3.0	3.5	71	2	R	5	8
Q94-9	5	4.3	3.9	3.0	2	2	S	8	9
Q94-18	5	3.8	3.9	3.8	117	2	R	8	8
Q94-25	5	3.8	3.1	4.0	3	2	R	8	9
Q96-27	4	3.3	4.0	4.0	67	3	R		
Q112-2	5	4.0	4.0	2.8	20	3	R	6	8
Q112-5	5	3.5	4.1	3.5	20	2	R	6	8
Q151-22	5	4.5	3.8	4.0	37	3	R		
Q151-26	5	3.8	4.5	4.0	27	3	R	7	8
Q155-3	4	3.8	3.6	4.0	29	2	S	6	7
Q183-5	5	4.5	4.9	4.0	1	2	R	7	9

[1]Appearance scored 1 to 5 with 5 the best.

[2]Scab index is relative to Chippewa as 100. Lesion type 2 is superficial while 3 or greater is pitted.

[3]Golden nematode. R is resistant.

[4]Late blight is scored from 1 to 9 with 9 being most severely defoliated.

New York Table 2c. Internal Characteristics of the Q Clones.

	ACD[1]	Chip Color[2] 40° 2 wk	40° 6 wk	50° 2 wk	50° 6 wk	Specific Gravity 1975	1976	1977
Katahdin	$0^{7}1^{3}$	U	U	U	U		1.072	1.067
Q52-5	0^{4}		A	A	A^{+}	1.072		1.072
Q53-5	$^{4}1^{4}$	U	U	U	U	1.084	1.076	1.068
Q54-6	$0^{7}1^{1}$	U	U	U	U	1.072	1.075	1.063
Q54-11	$0^{7}1^{8}$	U	U	U	U	1.082	1.075	1.063
Q54-15	0^{4}	U	U	U	U	1.079	1.068	1.063
Q54-22	$^{7}0^{1}$	U	U	A	A	1.072		1.068
Q54-26	$0^{7}1^{4}$	U	U	U		1.078	1.074	1.070
Q55-7	$^{4}0^{4}$					1.078		1.063
Q87-11	$1^{4}2^{5}$	A	A^{+}	A^{+}	A^{+}	1.075	1.083	1.071
Q87-17	$0^{3}1^{5}$	A	A^{+}	A^{+}	A^{+}	1.080	1.081	1.073
Q87-22	$0^{1}1^{7}$		U	I	I	1.077	1.077	1.073
Q87-25	$0^{5}1^{3}$	I	A	A	A^{+}	1.082	1.074	1.080
Q49-9	$0^{7}1^{8}$	U	A	A^{+}	A^{+}	1.082	1.080	1.068
Q94-18	$^{6}0^{2}$	U	I	I	I	1.082	1.080	1.078
Q94-25	$0^{6}1^{8}$	U	U	U	A	1.077	1.069	1.067
Q96-27	$^{7}0^{1}$	U		U	U	1.086	1.078	1.070
Q112-2	$0^{7}1^{4}$		I	U	U		1.079	1.065
Q112-5	0^{4}	U	U	U	U	1.078	1.072	1.060
Q151-24						1.070		1.060
Q151-26	$^{4}0^{4}$	U	U	I	I	1.065	1.067	1.059
Q155-3	$0^{4}1^{4}$	I	A	A	A^{+}	1.079	1.075	1.060
Q183-5	0^{4}					1.077		1.073

[1] After cooking darkening. 0 = white, 1 = grey, 2 = dark.

[2] U is unsatisfactory, I = intermediate, A = acceptable.

NORTH CAROLINA

F. L. Haynes

Breeding Program

Earliness, scab resistance, processing quality and adaptation to the Tidewater area continue to be the primary objectives of the breeding program. More than 80 percent of the crop is processed as chips and another 5 percent is utilized as frozen french fries. A small percentage is canned and the remainder is marketed as fresh table stock.

Seedling Production and Clonal Maintenance. The summer hybridization program was conducted at Waynesville. Twenty-six tetraploid crosses produced seeds for 1978 segregate production. Good results have been obtained in hybridization using the cut stem method and a lighted, temperature controlled room for fruit production. In 1976 and 1977 we were equally successful in producing fruit in a screenhouse with shade fabric (55% shade) added to the top. Summer weather at the Waynesville Station is characterized by mild temperatures and high humidity.

Eastern Trials. Three locations in the early commercial area were planted to performance trials of selected clones. The results are presented in N. C. Tables 1, 2, and 3. The Atlantic variety continued to be outstanding in both yield and processing quality. The clone tested as 64C2-3 was named Croatan and released to growers in 1977. The variety is a high yielding, midseason maturing, reliable chipper with resistance to heat sprouting. Certified seed is available from Maine and Pennsylvania. North Carolina no longer has a potato certification program.

Adaptation Study

The project of adaptation to the temperate zone of *S. phureja* and *S. stenotomum* was continued and expanded. An integrated population was grown of 220 plants of each of 60 families that were initially (in 1966) from 28 PHU, 17 STN, and 15 PHU x STN introductions. This seed nursery was sampled for storage of a large quantity of seed to represent the genetic reservoir of the population.

The study of tuber dry matter was continued. Narrow-sense heritability was estimated for specific gravity in tubers grown at Fletcher and Waynesville. The study was initiated in 1976 with 10 families. Three methods, realized heritability, parent-offspring regression, and half-sib family analysis, were used to estimate narrow-sense heritability on individual and combined locations data. Estimates ranged from 0.276 to 0.739. The three estimates least biased by genotype x environment interaction provided an average estimate of 0.428. The selected populationwas significantly higher in specific gravity than the unselected population, and the lack of change in genetic variance between the two populations indicates that additional cycles of selection should produce advances. Toward this goal, 129 genotypes with representatives from all original families were selected to produce the third cycle. A specific gravity of 1.090 was the minimum acceptable level for inclusion in the third cycle. The highest specific gravity included was 1.113.

In another study, genetic variance for tuber dormancy was estimated using as parents PHU and STN introductions. The estimates indicated that genetic variance was high and was composed entirely of additive variance when the hybrids PHU x STN comprised the reference population. Narrow sense heritability for individuals was estimated to be 0.73. This means that rapid progress can be made in shifting the mean length of tuber dormancy through breeding techniques.

The program of recurrent selection for increased heat tolerance was continued. A coastal location which experiences very high soil and air temperatures during July and August is being utilized to evaluate families for survival and tuber production. Surviving selections are being interbred to produce the next cycle. This program differs from that being conducted in the lowland tropics in that the segregates are being exposed to a typical long-day Temperate Zone photoperiod in combination with high temperatures.

North Carolina Table 1. Potato performance trial at Weeksville. Plots were 1 row, 30 ft. long, 4 replications of 22 entries in RCB, 40 hills/plot. Spacing in row, 9 inches; width row, 40 inches. Lb/plot x 4.356 = CWT/A. Fertilized: 450 lb/A 10-20-20 BDCST and plowed in; 1900 lb/A 5-10-10 banded in row; Total/A = 140 lbs N, 280 lbs P_2O_5, 280 lbs K_2O. Planted 3-11-77, harvested 6-29-77 (110 days).

Variety	US#1-A cwt/A	Percent US#1-A	Specific Gravity	Chip Color[1/]	Appearance[2/]	Maturity
73C26-5	433	96.2	1.057	5.2	8.0	Midseason
R. LaSoda	425	93.9	-	-	7.2	Midseason
72C78-2	399	92.8	65	3.4	8.0	Med. early
Atlantic	387	93.6	77	2.0	8.0	Midseason
72C75-2	383	88.1	63	3.0	8.0	Med. early
Pungo	382	93.4	64	3.4	7.0	Midseason
B7031-N2	378	94.8	67	4.8	8.0	Med. early
73C26-4	362	97.1	67	3.6	8.5	Midseason
Croatan	359	94.7	66	2.4	8.0	Midseason
73C17-3	347	92.1	64	2.2	8.0	Med. early
72C75-3	342	90.0	68	3.2	8.0	Med. early
Norchip	336	93.7	74	2.0	7.0	Med. early
Abnaki	328	95.9	63	3.8	8.0	Med. early
73C20-2	321	92.9	64	2.0	8.5	Early
71C15-20	320	96.2	80	2.2	8.0	Med. early
72C75-5	288	93.3	65	2.2	8.7	Med. early
73C2-2	279	93.4	66	2.4	8.7	Med. early
72C77-2	278	93.1	56	2.4	8.2	Early
Wauseon	268	95.1	62	2.2	8.0	Med. early
F774	266	92.6	70	2.8	7.0	Midseason
F162	259	94.5	67	3.0	7.0	Midseason
68C6-1	239	93.0	59	2.2	9.0	Early
L.S.D. .05	59	2.2			.6	
C.V. (PCT)	12.4	1.6			5.2	

[1/] Chip color determined by Wise Foods, Borden, Inc., Berwick, Pa. Average of 5 samples, 1 per week for 5 weeks following harvest. 1-4 acceptable with grade 1 = perfect; 5 useable but not desirable, 6-14 unacceptable with 14 = black.

[2/] Appearance
1 = Very poor
3 = Poor
5 = Fair
7 = Good
9 = Excellent

North Carolina Table 2. Potato performance trial in Tyrell County. Plots were 1 row, 30 ft. long, 4 replications of 25 entries and 28 augmented entries (7 per rep.) in RCB w/aug. ent. design. 40 hills/plot. Lbs/plot x 4.356 = CWT/A. Spacing in row, 9 inches, width row, 40 inches. Fertilized: 1400 lb/A 10-20-20. Planted 3-18-77, harvested 6-28-77 (102 days).

Variety	US#1-A cwt/A	Percent US#1-A	Specific Gravity	Chip[1/] Color	Appear-[2/] ance	Maturity
R. LaSoda	417	91.6	1.050	6.0	7.0	Midseason
73C26-5	402	95.3	50	4.2	7.7	Midseason
72C75-2	375	86.6	58	2.6	8.0	Med. early
73C26-3	374	92.2	60	3.6	8.0	Med. early
Pungo	366	90.9	64	4.2	7.0	Midseason
Atlantic	358	90.3	71	2.2	8.2	Midseason
B7031-N2	349	93.7	59	4.8	8.2	Med. early
73C26-6	347	92.4	58	3.0	8.2	Med. early
Wauseon	340	93.0	-	-	8.5	Med. early
Croatan	339	91.1	55	2.4	8.0	Midseason
72C75-3	335	89.4	60	3.4	7.2	Med. early
Norchip	324	86.6	64	2.4	7.0	Med. early
73C26-4	313	92.5	58	3.2	7.7	Midseason
B8769-N1	310	88.8	58	2.4	8.0	Med. early
71C15-20	309	88.1	75	2.2	8.0	Med. early
68C6-1	308	92.0	56	2.6	8.5	Early
B8398-N1	303	91.2	53	4.6	7.5	Early
73C28-4	297	89.5	51	5.4	7.7	Med. early
72C23-3	291	90.5	64	3.0	8.5	Med. early
F162	283	92.3	59	2.6	7.0	Midseason
F774	278	90.6	69	2.4	7.0	Midseason
Abnaki	267	93.9	58	4.4	7.5	Med. early
B8438-N3	259	88.9	48	6.2	8.0	Med. early
73C23-2	254	88.6	62	4.2	7.5	Midseason
B8588-N1	148	92.2	60	3.6	7.2	Med. early
	Augmented entries - Rep. 1 - adjusted yields					
Katahdin	328	93.7	1.057	5.2	7.0	Med. late
72C75-8	308	87.7	70	1.8	8.0	Midseason
73C22-1	286	96.0	51	2.8	9.0	Med. early
73C25-1	275	86.2	51	3.4	8.0	Med. early
73C1-3	249	82.0	70	3.8	7.0	Midseason
B8676-N2	243	93.6	60	2.0	8.0	Med. early
B7583-6	166	87.6	61	6.0	8.0	Med. late

North Carolina Table 2 continued.

	Augmented entries - Rep 2 - adjusted yields					
73C26-9	345	86.7	1.058	2.6	9.0	Med. early
B8670-N1	311	89.8	59	4.8	8.0	Midseason
72C5-2	265	88.6	-	-	8.0	Med. early
72C77-2	228	80.8	53	3.6	8.0	Med. early
73C1-1	221	86.3	53	3.4	9.0	Med. early
B8705-N2	145	80.6	58	2.2	8.0	Med. early
B8676-N3	80	81.9	60	3.6	8.0	Med. early
	Augmented entries - Rep 3 - adjusted yields					
72C78-2	424	97.2	1.058	3.0	8.0	Midseason
73C20-3	370	93.3	66	3.0	7.0	Midseason
73C26-1	331	87.4	62	3.6	8.0	Med. early
B8579-N8	313	88.0	66	3.0	8.0	Med. early
B8579-N6	267	88.6	-	-	8.0	Midseason
B8674-N2	254	89.3	50	3.0	8.0	Early
B8708-N1	233	78.2	66	2.2	9.0	Early
	Augmented entries - Rep 4 - adjusted yields					
73C25-2	495	88.6	-	-	8.0	Midseason
R. Pontiac	384	88.0	-	-	7.0	Med. early
72C58-2	349	93.9	1.061	3.4	7.0	Midseason
72C75-5	312	89.2	63	3.4	8.0	Midseason
B8674-N1	303	86.2	56	2.4	8.0	Midseason
B8583-N2	249	84.9	62	4.8	8.0	Early
B8579-N4	242	92.0	63	1.6	7.0	Midseason
	L.S.D. (.05) Replicated entries (RE), augmented (AE)					
RE	53	4.0			.6	
AE same R.	106	8.0			1.2	
AE dif. R.	108	8.1			1.2	
RE vs AE	85	6.4			.9	
C.V. (PCT)	11.8	3.1			5.3	

1/ and 2/ See footnotes, N.C. Table 1.

North Carolina Table 3. Potato performance trial at Tidewater Research Station, Plymouth. Breeding clone performance trial. Plots were 1 row, 33.3 ft. long, 10 replicated entries, 56 augmented entries (14 per rep.), 4 replications in RCB w/aug. ent. design. 40 hills per plot. Spacing in row, 10 inches, width row, 38 inches. Lbs/plot x 4.1267 = CWT/A. Fertilized: 1000 lbs/A 10-20-20. Planted 3-16-77, harvested 6-30-77 (106 days).

Variety	US#1-A cwt/A	Percent US#1-A	Appearance 2/	Maturity
B7031-N2	306	88.2	7.7	Med. early
Atlantic	301	89.2	8.2	Midseason
Pungo	269	83.3	7.0	Midseason
Wauseon	248	85.0	8.0	Med. early
68C6-1	248	84.1	8.2	Early
Croatan	225	74.3	7.5	Midseason
Norchip	222	76.1	7.2	Med. early
71C15-20	214	78.1	8.0	Med. early
73C28-4	202	73.3	7.0	Midseason
72C75-2	190	65.6	7.7	Midseason
Augmented entries - Rep 1 - adjusted yields				
B8583-N4	170	85.6	8.0	Med. early
73C22-1	164	85.4	7.0	Med. early
73C31-4	114	73.4	8.0	Midseason
73C31-3	104	74.2	7.0	Med. late
73C2-2	98	78.0	8.0	Midseason
B8438-N2	91	73.8	8.0	Med. late
72C58-2	91	70.2	8.0	Med. early
72C75-5	91	75.1	8.0	Midseason
B8579-N8	85	75.4	8.0	Midseason
72C75-8	83	67.3	7.0	Med. early
72C5-2	58	80.0	8.0	Med. early
B8423-N2	44	23.4	7.0	Med. late
72C77-2	38	61.5	8.0	Med. early
B8618-N1	19	73.7	8.0	Med. early
Augmented entries - Rep 2 - adjusted yields				
73C26-7	336	90.2	8.0	Med. early
72C78-2	294	88.6	9.0	Med. early
73C26-8	272	83.2	7.0	Med. early
73C20-1	243	82.1	8.0	Med. early
73C31-1	234	77.5	8.0	Med. early
73C26-1	212	80.8	8.0	Med. early
[illegible]C2-1	212	91.4	7.0	Midseason

North Carolina Table 3 continued.

B8438-N3	208	75.9	8.0	Med. early
B8579-N4	206	84.9	7.0	Med. early
73C28-3	199	82.2	7.0	Med. early
B8644-N1	187	68.9	8.0	Early
B8769-N1	183	79.7	8.0	Med. early
B8583-N2	129	74.6	9.0	Early
B8676-N1	98	68.3	8.0	Med. early
Augmented entries - Rep 3 - adjusted yields				
Abnaki	233	84.0	7.0	Midseason
F774	204	85.4	7.0	Midseason
73C1-4	188	74.7	8.0	Early
B8761-N1	188	84.8	8.0	Midseason
B8618-N2	186	79.4	8.0	Med. early
73C2-1	183	77.0	7.0	Midseason
F162	183	90.4	7.0	Midseason
73C16-2	179	81.8	8.0	Med. early
73C1-3	163	66.8	7.0	Med. early
73C8-1	142	77.7	7.0	Midseason
B8674-N2	132	79.8	8.0	Early
73C28-1	130	77.2	9.0	Early
73C23-1	107	44.8	4.0	Midseason
B8708-N1	37	47.0	9.0	Early
Augmented entries - Rep 4 - adjusted yields				
73C25-2	436	85.3	8.0	Midseason
73C26-9	422	88.6	8.0	Early
73C28-2	409	91.9	7.0	Med. early
73C7-1	409	93.9	8.0	Midseason
73C20-3	407	91.5	8.0	Med. early
73C25-1	364	78.0	8.0	Early
B8579-N6	347	90.7	8.0	Med. early
73C35-1	333	78.7	8.0	Early
B8670-N1	323	85.9	8.0	Med. early
B8443-N1	312	72.4	9.0	Med. early
B8674-N1	310	86.8	8.0	Med. early
73C26-2	304	71.6	8.0	Med. early
73C23-3	298	84.8	8.0	Midseason
B8705-N2	244	75.7	8.0	Med. early
L.S.D. (.05) Replicated entries (RE), augmented (AE)				
RE	60	9.0	.6	
AE same R.	120	18.1	1.2	
AE dif. R.	126	18.9	1.3	
RE vs AE	100	15.0	1.0	
C.V. (PCT)	17.1	7.8	5.4	

NORTH DAKOTA

R. H. Johansen, B. Farnsworth, W. Rostedt and R. T. Zink

Breeding Program

Crossing and Seedling Production. One hundred and forty-five crosses were made during the late winter and early spring of 1977. Parents used in the crossing program possessed a high degree of russeting, good red color, high solids and yield, good shape and type, and good processing qualities. Sixty-two thousand six hundred and eleven seedlings were grown in the greenhouse during the summer of 1977 and 49,113 seedlings were grown in the field at the Langdon Experiment Station. Eleven hundred and twenty-five clones were selected at harvest time from the seedlings population for further evaluation and increase. Seedlings were planted at Langdon on May 9-11 and harvested September 19-21. Almost perfect weather conditions prevailed at planting and throughout the entire growing season resulting in an excellent yield at harvest time.

Advanced Selections. Five hundred and forty-two second year clones were planted at Grand Forks and Absaraka and 152 were saved at harvest. Two hundred and thirty-one third year and older clones were grown during 1977 and 118 were selected at harvest time for further increase and evaluation. At Grand Forks the clones were grown in a scab and adaptation trial while the plot at Absaraka was for seed increase. The plots at Grand Forks were planted on May 17-18 and harvested on September 8.

Promising Selections. To date the two white selections, ND8888-2 and ND8891-3 look the most promising and most likely consideration will have to be made within a year or so for the release of ND8888-2 as a named variety. About 15 to 20 acres of ND8888-2 were grown by certified seed growers in 1977 and a large commercial planting was made in southern Alabama last year. Line ND8888-2 appears to be quite well adapted as a chip cultivar for Alabama. This season ND8891-3 did not produce as high a yield as in the past, however, this selection still appears promising as a processing cultivar, possibly more as a frozen french fry cultivar. Its' oblong shape makes it quite satisfactory for the production of long french fries.

Line ND8751-16 continues to look good as a low sucrose excellent chipping selection. Line ND8850-2, a cross between a Frito-Lay numbered selection 496 and a North Dakota selection 7789-3, produced fairly good yield and solids and excellent white chips. Other selections that looked promising were ND9403-16R, ND9516-4R, ND9852-2Russ, ND9130-1Russ, I39-1Russ, ND9750-6 and ND194-1. Seed was increased by several growers in the Red River Valley and at Beach, North Dakota. At Barnesville, Minnesota a plot was planted with Mr. Ralph Mathew. This plot included several North Dakota and Minnesota selections.

Variety Trials. Potato cultivar trials were again planted at five locations in North Dakota. Superintendent Ernie French conducted the trials at Williston and Superintendent Ben Hoag conducted the trials at Minot. The trials at Carrington were planted and harvested by the Horticulture Department; however, Superintendent Howard Olson maintained the trials throughout the growing season. The trials at Park River and Grand Forks were conducted in a similar manner by Wayne Grinde and Dennis Askim, respectively.

The cultivars were grown in plots of 25 hills and replicated four times in a randomized block. Twenty-five entries were grown at Park River and Grand Forks. Sixteen entries were grown at Carrington in dryland and irrigation trials and 14 entries were tested at Minot and Williston. Marketable yield consisted of all U.S. No. 1 tubers over 1 7/8 inches in diameter. Specific gravity was determined by the use of a potato hydrometer.

Spacing, fertilizer, soil type, planting and harvest dates of each location are shown in Table 1.

North Dakota Table 1. Spacing, Fertilizer, Soil Type, Planting and Harvest Dates of North Dakota State Cultivar Trials

Location	Spacing Row in.	Spacing Plant in.	Fertilizer	Soil Type	Planting Date	Harvest Date
Grand Forks	38	12	400#/A 20-20-12	Bearden Clay Loam	5/17	9/12
Park River	38	12	500#/A 22-22-12	Glyndon Silt Loam	5/3	9/6
Carrington Irrigation	38	7.97	1000#/A 15-30-15	Heimdahl Loam	5/12	9/28
Carrington Dryland	38	15.9	1000#/A 15-30-35	Heimdahl Loam	5/13	9/28
Minot	36	14	200#/A 40-39-0	Williams Loam	5/14	10/4
Williston	38	16	None	Williams Silt Loam	5/12	10/12

Growing conditions in 1977 were generally quite good for crop production. The season was one of the earliest in several years, with most of the trials being planted the first part of May. Soil conditions were quite dry early in the growing season; however by June 1st ample moisture prevailed. If ample rainfall hadn't occurred early and throughout the season, crop production would have been a disaster following the extremely dry season in 1976. Grand Forks received 13.89 inches of precipitation from May 1st to September 18th. Seasonal temperatures seemed to be always one month off as most of June and July were quite warm while August was quite cool. Frost didn't occur until almost the 1st of October.

Red Pontiac was again the highest yielding entry in trial. Kennebec, ND8891-3 and ND8888-2 also produced good yields. Norland and Bison produced quite comparable yields. In the Valley trials, Russet Burbank yielded close to 100 cwt per acre less than Norgold Russet and Butte yields were approximately 20 cwt per acre less than that of Russet Burbank. Lines ND9403-16R and ND9516-4R, two red selections, both produced quite high yields in the Red River Valley trials. Several selections produced quite low yields; however some selections had a fair amount of virus in them and this no doubt was accountable for the low yields.

In comparing dryland locations, Park River produced the highest yields. The irrigated trial at Carrington averaged 278 cwt per acre more than the non-irrigated trial.

Norchip again produced the highest average percent total solids. Norchip had an average of 20.6 percent total solids while Kennebec averaged 18.3 percent total solids. For the chipper,the higher total solids of Norchip makes it more advantageous to grow rather than Kennebec. Lines ND8888-2 and ND8891-3 also produced a high average percent total solids. Red Pontiac, with an average of 17.5 percent, produced the lowest total solids. Park River produced the highest percent total solids, however, there were very little location differences in 1977.

California and Texas Programs. Ten thousand six hundred and sixty-nine second size potato seedling tubers were sent to Dr. Ron Voss and Mr. Don Halseth at Davis, California. Half of these seedlings were planted at Shafter, California and the other half at Tulelake which is in the northern part of California. In addition, 116 second and third year and older clones were also sent and they were planted at the same two locations in southern and northern California. Ten North Dakota advanced clones were included in replicated trials grown in California. The year 1977 was the third year that a cooperative potato breeding program has been in existance between California and North Dakota and there are now several North Dakota California seedlings that look promising. California has similar projects cooperating with USDA, Idaho, Colorado and Washington.

Over 20,000 second size potato seedling tubers were also sent to Dr. Creighton Miller and Mr. Doug Smallwood and planted at Lubbock, Texas. Forty-two North Dakota Texas clones selected at Lubbock were tested in both North Dakota and Texas in 1977 and 22 advanced North Dakota clones were grown in adaptation trials in Texas. Also, 5,008 second size seedlings were sent to Idaho.

Processing and Culinary Tests. Chip tests for cultivars and selections grown in cultivar trials in 1976 at Park River and Grand Forks are reported in Tables 5 and 6. Samples were stored at 40° F for eight weeks and chipped out immediately at that temperature and then stored at 65° F and chipped at weekly intervals for three weeks. Chip samples were scored for color and chip yield. Color was determined by the standard chip color chart and the photovolt meter.

Several selections showed to have chip color as good or similar to Norchip. They were ND8742-2, ND8751-16, ND9124-4, ND9403-16R, ND9403-19R, ND9476-5, ND9609-5. As in the past tests, Bison produced chips lighter in color than Norchip, however because of its red skin color, little interest has been shown by chip companies to process this cultivar.

The Processing Laboratory at East Grand Forks again tested all the second year, third year and fourth year and older advanced selections. Sucrose tests were also done on all similar selections.

Table 2 shows the chip quality of second, third and fourth year and older selections tested for chip quality in 1977.

North Dakota Table 2. Advanced Clones Tested for Chip Color in 1977

	Cold Storage - 43° F		Reconditioned 4 weeks-65° F	
Year of Selection	Agtron Below 40 # Clones	Agtron Above 40 # Clones	Agtron Below 40 # Clones	Agtron Above 40 # Clones
2nd Year	90	68	66	92
3rd Year	62	34	45	51
4th Year & Older	14	7	8	13

After four weeks of storage at 65° F the following selections had an Agtron reading similar or higher than Norchip: 9750-3, 9403-21R, 9779-8, 7878-1, 8888-2, 9476-5, 9609-5, 9583-2, 8850-2, 8767-10R, 9508-1 and 9794-5. Most all of these selections are presently being increased.

The Processing Laboratory also flaked and french fried several of the more promising selections.

Ten selections and the cultivar Bison were tested for flake quality by the Pillsbury Company at Minneapolis, Minnesota. In the fall of 1977 a similar number of selections were sent to the Pillsbury Company for similar tests.

Boiling and baking tests were conducted on all entries in the 1976 Potato Cultivar Trial grown at Grand Forks and Park River (Tables 7 and 8). The majority of the selections had fair to good culinary qualities. The high dry matter selections had more sloughing than the low dry matter selections and this can be expected. Lines ND8888-2 and ND8891-3 showed cooking quality equal to or better than the standard or check cultivars.

Disease Testing. Continuing evaluations for scab resistance were conducted at the Potato Research Farm, Grand Forks. Each selection to be evaluated was planted in two replications of three hills each. Seven hundred and sixty selections were evaluated; 172 appeared to have excellent resistance, and 310 selections showed good resistance with only a trace of disease present.

Seven advanced selections provided by horticulture were evaluated for resistance to late blight (*Phytophthora infestans*) race 0 using the detached leaf - sporulation method. None of the seven showed resistance. Lines ND9403-16R, ND9403-19R and ND9852-2Russ, which were found to be resistant to race 0 in 1976, were found to be susceptible in 1977 trials.

Ten selections were tested for resistance to Verticillium wilt (*Verticillium dahliae*) and all were susceptible.

Mechanical inoculation of ten advanced selections with spindle tuber viroid was used to evaluate resistance. Incoluated plants were indexed by the tomato test. All selections were susceptible.

Twelve advanced selections were mechanically inoculated with potato virus X and evaluated for resistance by indexing inoculated potato plants on *Gomphrena globosa*. Eight selections were found to be susceptible, three were resistant (ND8767-10R, ND8891-3 and AND 16-1) and one selection (ND9004-1Russ) responded with chlorotic local lesions on inoculated leaves. Ten replications of each plant were conducted.

North Dakota Table 3. Specific Gravity and Total Solids of Potato Cultivars and Selections Grown in the State-Wide Trial - 1977

Cultivar	Grand Forks		Park River		Carrington Dryland		Carrington Irrigation		Minot		Williston		% Ave. Total Solids
	Sp. Gr.[1/]	% Total Solids	Sp. Gr.	% Total Solids	Sp. Gr.	% Total Solids	Sp. Gr.	% Total Solids	Sp. Gr.	% Total Solids	Sp. Gr.	% Total Solids	
Norchip	88	21.4	88	21.4	75	18.6	85	20.7	92	22.2	79	19.4	20.6
ND8888-2	80	19.7	83	20.3	74	18.4	78	19.2	91	22.0	80	19.7	19.9
ND8891-3	77	19.0	84	20.5	74	18.4	77	19.0	92	22.0	79	19.4	19.8
Russet Burbank	79	19.4	79	19.4	71	17.7	89	21.6	89	2-.6	74	18.4	19.7
ND9476-5	82	20.1	85	20.7	76	18.8	80	19.7	85	20.7	72	18.0	19.7
Norgold Russet	79	19.4	82	20.1	74	18.4	83	20.3	84	20.5	76	18.8	19.6
ND8850-2	81	19.9	82	20.1	75	18.6	77	19.0	84	20.5	75	18.6	19.5
ND9358-3Russ	75	18.6	79	19.4	75	18.6	80	19.7	81	19.9	76	18.8	19.2
ND8914-5Russ	79	19.4	79	19.4	76	18.8	78	19.2	78	19.2	74	18.4	19.1
Viking	77	19.0	77	19.0	71	17.7	80	19.7	82	20.1	74	18.4	19.0
Red Norland	75	18.6	77	19.0	71	17.7	82	20.1	81	19.9	67	16.9	18.7
Bison	76	18.8	79	19.4	72	18.0	71	17.7	83	20.3	72	18.0	18.7
Kennebec	71	17.7	68	17.1	62	15.8	79	19.4	87	21.2	76	18.8	18.3
Red Pontiac	71	17.7	67	16.9	66	16.7	73	18.2	76	18.8	66	16.7	17.5
ND9403-16R	78	19.2	81	19.9	73	18.2	78	19.2					19.1
ND9609-5	76	18.8	78	19.2	67	16.9	70	17.5					18.1
ND9583-1	94	22.7	100	24.0									23.4
ND9403-19R	87	21.2	89	21.6									21.4
ND9434-1Russ	83	20.3	89	21.6									21.0
ND9642-3Russ	84	20.5	88	21.4									21.0
ND8924-4Russ	82	20.1	84	20.5									20.3
ND9516-4R	80	19.7	83	20.3									20.0
ND9526-4Russ	77	19.0	82	20.1									19.6
ND8202-2R	75	18.6	80	19.7									19.2
Butte	73	18.2	76	18.8									18.5
Average	79.0	19.4	81.6	20.1	72.0	18.0	78.8	19.4	84.6	20.7	74.3	18.4	

1/ 1.0 deleted

North Dakota Table 4. U.S. No. 1 Yield and Percent U.S. No. 1 of Potato Cultivars and Selections Grown in State-Wide Trials - 1977

	Grand Forks		Park River		Carrington Dryland		Carrington Irrigated		Minot		Williston		
Cultivar	Cwt/A U.S. No.1	% U.S. No.1	Cwt/A U.S. No.1	% U.S. No.1	Cwt/A U.S. No.1	% U.S. No.1	Cwt/A U.S. No.1	% U.S. No.1	Cwt/A U.S. No.1	% U.S. No.1	Cwt/A U.S. No.1	% U.S. No.1	Average U.S. No.1/Yield
Red Pontiac	324	97	477	98	182	100	602	96	210	87	202	92	333
Kennebec	287	93	397	97	180	95	517	96	228	90	205	92	302
ND8891-3	329	95	397	96	153	91	476	90	136	80	105	82	266
ND8888-2	329	97	292	96	149	85	505	92	160	74	129	76	261
Viking	283	97	342	99	131	96	431	97	184	95	170	97	257
Norgold Russet	291	93	337	95	181	91	450	92	113	71	112	79	247
Red Norland	243	98	253	96	142	96	480	96	317	83	148	88	234
Bison	288	97	257	96	107	95	410	95	123	77	139	92	221
Norchip	283	96	282	97	66	76	363	92	145	67	139	79	213
ND8850-2	264	95	264	94	100	76	352	89	137	77	103	76	203
Russet Burbank	171	91	240	91	133	89	361	93	122	56	89	66	186
ND9476-5	157	93	136	91	52	79	321	93	51	68	75	88	132
ND8914-5Russ	83	90	73	88	60	72	264	87	43	67	55	69	96
ND9358-3Russ	114	86	90	87	60	80	155	79	42	51	61	77	87
ND9403-16R	269	95	267	95	165	95	437	95					285
ND9609-5	138	85	152	87	51	72	233	85					144
ND9516-4R	305	90	253	95									279
ND9403-19R	188	92	242	94									215
ND8202-2R	167	95	222	95									195
Butte	148	84	213	86									181
ND8924-4Russ	167	89	170	90									169
ND9583-1	144	85	184	88									164
ND9434-1Russ	162	88	133	85									148
ND9526-4Russ	140	86	145	90									143
ND9642-3Russ	119	92	154	91									137
AVERAGE	216		239		120		398		131		124		

North Dakota Table 5. 1977 Chip Tests of Cultivars and Selections Grown at Park, River, North Dakota - 1976.

	0 weeks - 40° F			2 weeks - 65° F			3 weeks - 65° F			4 weeks - 65° F		
Cultivar	Color Chart 1/	Photo volt 2/	Yield 3/	Color Chart	Photo volt	Yield	Color Chart	Photo volt	Yield	Color Chart	Photo volt	Yield
Bison	4.5	36.5	33.0	5.0	41.8	34.8	4.3	40.0	30.8	4.5	38.8	31.5
Centennial Russet	11.0	9.0	32.0	8.0	24.8	34.5	10.0	10.8	33.5	10.5	10.3	32.0
Kennebec	8.8	21.0	30.5	6.0	35.0	29.3	5.0	35.0	30.8	5.0	34.0	31.5
Norchip	7.0	30.3	32.8	5.5	39.5	35.0	4.8	37.5	35.3	5.0	36.5	34.5
Norgold Russet	9.5	17.8	33.8	7.0	28.0	31.8	6.5	29.8	34.8	7.0	23.0	32.3
Norland	8.5	22.0	31.5	7.5	27.5	32.5	5.8	32.8	34.5	5.5	33.5	32.8
Red Pontiac	10+	13.5	30.5	9.5	14.8	29.5	8.0	22.0	31.5	7.0	28.0	29.8
Russet Burbank	10.0	11.8	28.3	8.0	22.0	28.5	8.0	19.5	29.0	7.8	22.5	28.8
Viking	10.5	12.5	30.8	9.0	18.5	33.0	8.5	16.5	34.3	8.5	14.3	30.5
ND8742-2	8.5	20.8	33.3	5.0	38.8	33.8	4.0	38.0	35.0	4.5	36.8	33.3
ND8751-16	7.0	25.5	35.3	5.5	35.8	35.5	4.5	37.3	37.0	4.0	33.8	34.8
ND8850-2	8.0	24.8	33.3	8.0	26.0	33.8	5.5	35.3	34.3	6.3	32.3	33.0
ND8888-2	7.3	29.5	35.0	6.0	36.5	34.0	5.3	33.3	37.3	6.5	32.0	38.0
ND8891-3	7.5	25.3	31.8	5.5	35.0	34.3	4.5	37.3	37.0	5.5	33.3	35.3
ND8913-4Russ	9.0	18.8	35.0	7.0	29.8	35.0	6.0	34.0	36.5	7.0	28.3	34.0
ND8914-5Russ	10.0	11.5	31.3	9.5	18.8	35.3	9.0	14.5	33.8	9.0	13.0	30.3
ND9124-4	5.5	34.8	35.8	5.5	39.3	36.5	4.5	34.8	37.0	4.5	37.5	35.8
ND9358-3Russ	8.0	25.8	33.0	6.0	34.3	34.0	5.0	37.5	35.8	5.8	32.3	33.8
ND9403-16R	6.5	27.8	33.0	4.5	40.5	33.0	4.0	37.5	35.8	5.0	36.0	34.0
ND9403-19R	4.5	35.8	33.3	4.5	43.0	33.3	4.0	41.0	38.0	4.8	38.3	35.5
ND9476-5	6.5	28.8	32.5	5.0	38.5	33.8	4.0	41.8	34.5	4.3	36.8	33.3
ND9516-4R	8.5	19.3	31.8	5.0	38.8	31.8	4.5	34.3	34.5	6.0	31.3	34.0
ND9526-4Russ	8.5	21.3	33.3	5.0	40.0	32.8	5.0	37.0	34.3	6.0	30.5	29.8
ND9609-5	4.5	38.5	32.3	5.0	42.5	33.3	4.0	42.5	33.8	4.0	40.3	32.8
ND9642-3Russ	9.5	18.0	31.5	7.0	29.3	31.3	5.5	36.8	36.5	5.3	32.5	35.0

1/ Color Chart (1 light, 11 dark)
2/ Photovolt - higher numbers are lighter in color
3/ Yield - Percent chip yield

North Dakota Table 6. 1977 Chip Tests of Cultivars and Selections Grown at Grand Forks, North Dakota, 1976.

	0 weeks - 40° F			2 weeks - 65° F			3 weeks - 65° F			4 weeks - 65° F		
Cultivar	Color Chart 1/	Photo volt 2/	Yield 3/	Color Chart	Photo volt	Yield	Color Chart	Photo volt	Yield	Color Chart	Photo volt	Yield
Bison	8.5	20.0	31.5	3.5	40.3	33.0	5.0	44.5	34.8	4.5	39.8	31.8
Centennial Russet	10.0+	6.0	31.5	10.5	9.0	32.5	10.0	12.8	31.7	11.0	10.0	31.5
Kennebec	9.0	16.3	31.8	5.5	37.3	31.8	5.8	36.5	32.5	6.2	31.0	31.0
Norchip	8.5	20.5	35.0	4.5	36.8	37.0	5.0	40.5	37.3	5.0	38.0	36.0
Norgold Russet	9.5+	14.0	33.5	9.0	17.3	33.8	7.8	23.3	36.5	9.0	16.3	33.8
Norland	9.5	12.3	32.3	7.5	25.8	32.8	6.0	37.3	33.8	7.5	26.5	33.5
Red Pontiac	10.0	10.8	31.0	9.0	18.0	32.3	8.5	22.0	32.0	8.5	25.0	31.5
Russet Burbank	10.0+	13.0	32.5	7.5	25.8	33.3	8.5	24.5	35.0	7.5	21.3	32.5
Viking	10.0	7.8	31.2	10.0	12.3	32.5	10.0	12.0	33.0	9.5	17.8	34.5
ND8742-2	9.0	16.0	31.5	5.0	35.0	33.5	6.0	38.0	33.3	5.5	35.5	33.5
ND8751-16	9.0	15.3	34.5	6.0	32.8	35.3	5.0	27.3	37.3	5.0	36.5	35.3
ND8850-2	8.0	26.3	34.0	6.5	32.3	35.3	6.0	33.3	36.0	5.3	36.8	36.0
ND8888-2	8.5	16.0	34.3	6.0	33.8	36.5	6.5	32.3	37.5	6.3	30.0	35.5
ND8891-3	8.5+	17.5	31.8	6.5	25.5	35.0	6.5	32.0	34.8	5.8	33.0	36.5
ND8913-4Russ	10.0+	10.5	32.5	8.5	23.3	34.5	8.0	18.8	37.5	8.0	20.8	32.5
ND8914-5Russ	10.0+	7.8	30.0	10.5	12.3	29.5	10.0	13.3	31.0	10.0	11.0	30.5
ND8124-4	6.0	32.3	35.0	4.5	36.3	36.5	4.0	48.0	36.0	3.5	42.5	36.8
ND9358-3Russ	9.0	17.0	33.3	7.0	25.5	33.3	6.0	42.3	34.0	5.3	35.3	36.3
ND9403-16R	8.5	18.3	33.5	6.5	32.0	33.8	4.5	43.8	34.0	4.0	41.0	33.5
ND9403-19R	7.5	28.8	35.3	8.0	29.3	34.3	5.0	41.3	36.3	5.4	38.5	36.3
ND9476-5	7.0	28.8	32.8	4.0	37.3	33.8	4.5	42.5	34.8	3.0	40.0	34.8
ND9516-4R	9.5	11.8	33.0	7.0	23.8	33.0	6.5	31.0	35.8	7.0	26.0	33.0
ND9526-4Russ	8.5	15.0	33.0	5.5	33.0	36.3	5.5	40.3	37.0	5.5	38.2	36.3
ND9609-5	8.0	23.3	31.5	5.0	34.3	31.5	6.5	32.8	32.8	5.0	38.0	34.0
ND9642-3Russ	9.5+	9.8	33.5	8.5	24.8	33.8	8.0	18.8	37.3	8.5	17.8	32.3

1/ Color Chart (1 light, 11 dark)
2/ Photovolt - higher numbers are lighter in color
3/ Yield - Percent chip yield

North Dakota Table 7. 1977 Cooking Tests of Cultivars and Selections Grown at Park River, North Dakota - 1976

	Boiling						Baking			
Cultivar	Sloughing 1/	Mealiness 2/	Texture 3/	Color After Cooking 4/	Color 4 Hours After Cooking 5/	Flavor 6/	Mealiness	Texture	Color	Flavor
Bison	10.0	7.5	7.5	8.0	6.5	8.5	7.0	7.5	9.0	8.0
Centennial Russet	8.0	7.5	8.5	8.5	7.5+	8.5	8.0	8.0	8.0	8.0
Kennebec	9.5	8.0	8.5	7.5	5.5	9.0	8.5	8.5	7.5	8.0
Norchip	10.0	8.0	8.0	8.5	7.0	8.5	8.0	8.0	8.5	8.5
Norgold Russet	9.0	9.0	9.0	8.5	6.0	8.5	9.0	8.0	9.0	9.0
Norland	9.5	8.0	8.5	7.5	5.5	9.0	7.0	7.5	9.0	8.0
Red Pontiac	10.0	7.5	7.5	8.5	7.5	8.0	7.0	7.5	8.5	8.5
Russet Burbank	10.0	8.0	8.0	9.0	8.0	7.0	8.0	7.5	8.0	6.5
Viking	10.0	7.5	7.5	9.5	7.5+	9.0	7.5	7.5	9.5	8.5
ND8742-2	8.0	9.5	9.0	8.0	7.0	9.5	8.0	7.5	7.5	8.5
ND8751-16	7.5	9.5	9.5	8.0	5.5	9.0	8.5	8.0	8.5	8.0
ND8850-2	9.0	9.0	8.5	8.0	7.0	8.5	8.0	7.5	7.5	8.5
ND8888-2	9.5	9.5	9.5	9.5	7.5	10.0	8.5	8.5	8.5	9.0
ND8891-3	9.5	8.5	8.5	8.0	7.0	9.0	8.0	7.5	7.5	8.5
ND8913-4Russ	6.5	10.0	10.0	8.0	6.5	10.0	9.0	9.0	8.0	9.5
ND8914-5Russ	9.0	8.0	9.0	8.0	6.0	8.5	8.5	9.0	9.0	9.0
ND8124-4	9.0	8.0	8.0	6.5	4.0	9.0	8.5	9.0	8.5	9.0
ND9338-3Russ	9.5	8.0	8.0	8.0	5.5	8.5	9.0	9.0	8.0	9.0
ND9403-16R	10.0	8.5	8.5	8.5	7.5	9.5	8.0	8.0	9.5	9.5
ND9403-19R	8.5	8.0	8.5	8.5	5.0	8.5	8.5	8.5	8.0	9.5
ND9476-5	9.5	9.0	9.0	7.5	5.0	9.0	8.0	8.0	9.0	9.0
ND9516-4R	9.0	8.5	8.5	8.5	7.0	9.0	9.0	9.0	9.0	9.5
ND9526-4Russ	10.0	8.5	8.5	8.0	6.5	8.5	8.5	8.5	8.5	9.0
ND9609-5	10.0	7.5	7.5	9.0	7.5+	8.5	7.0	6.5	7.5	8.0
ND9642-3Russ	7.5	8.5	8.5	9.5	8.5	10.0	8.0	8.5	8.5	8.5

1/ Severe Sloughing - 1; No Sloughing - 10
2/ Not Mealy - 1; Very Dry and Mealy - 10
3/ Poor Texture - 1; Good Texture - 10
4/ Dark - 1; Very White - 10
5/ Dark - 1; Very White - 10
6/ Poor Flavor - 1; Excellent Flavor - 10

North Dakota Table 8. 1977 Cooking Tests of Cultivars and Selections Grown at Grand Forks, North Dakota - 1976.

	Boiling						Baking			
Cultivar	Sloughing 1/	Mealiness 2/	Texture 3/	Color After Cooking 4/	Color 4 Hours After Cooking 5/	Flavor 6/	Mealiness	Texture	Color	Flavor
Bison	10.0	8.0	7.5	6.5	4.5	8.0	7.0	8.0	8.0	8.0
Centennial Russet	8.0	8.0	8.5	7.5	6.0+	8.5	8.0	8.5	8.5	8.5
Kennebec	8.0	8.5	9.0	7.5	6.0	8.5	8.5	8.5	9.0	8.5
Norchip	9.0	10.0	10.0	7.5	6.5	9.5	9.5	9.5	9.0	9.5
Norgold Russet	7.5	10.0	9.0	9.0	8.0+	9.5	9.5	9.5	9.5	9.0
Norland	9.5	6.5	7.0	7.5	6.0	9.0	8.0	8.5	9.5	8.5
Red Pontiac	9.0	7.5	7.5	9.0	8.0	8.5	6.0	6.0	8.0	5.0
Russet Burbank	9.5	7.5	7.0	7.5	6.5	5.0	7.5	8.5	8.5	6.0
Viking	10.0	8.0	8.5	9.0	6.5	8.5	8.0	8.5	8.5	8.5
ND8742-2	8.0	9.5	10.0	7.0	45.	7.5	8.0	9.0	7.5	7.0
ND8751-16	7.0	9.5	10.0	8.0	6.0	10.0	10.0	10.0	9.0	9.0
ND8850-2	8.5	8.5	9.5	8.0	7.0	10.0	9.0	9.5	9.0	9.0
ND8888-2	9.0	9.5	9.5	9.0	7.5+	9.5	10.0	10.0	10.0	9.5
ND8891-3	8.0	9.0	9.5	9.0	8.0	9.0	9.5	10.0	9.5	9.0
ND8913-4Russ	8.0	10.0	10.0	9.0	8.0+	9.5	9.5	10.0	10.0	8.5
ND8914-5Russ	7.0	8.5	8.0	8.0	6.0	9.0	8.5	8.5	10.0	7.0
ND9124-4	7.0	9.0	9.5	7.0	5.0	8.5	8.5	9.0	9.0	7.0
ND9358-3Russ	9.5	8.5	8.0	8.0	6.5	8.5	8.5	9.0	9.0	6.0
ND9403-16R	10.0	7.5	8.5	8.0	5.5	8.5	7.5	7.5	7.0	8.0
ND9403-19R	9.0	8.5	8.5	8.0	4.5	8.0	7.5	8.0	8.0	9.0
ND9476-5	9.0	7.0	7.5	7.0	4.5	7.5	8.0	8.0	9.0	8.0
ND9516-4R	9.0	8.0	8.5	8.5	6.5	8.5	7.5	7.5	8.5	8.5
ND9526-4Russ	10.0	8.0	8.5	8.5	6.5	9.0	8.5	8.5	10.0	10.0
ND9609-5	10.0	8.0	8.5	8.5	7.0	8.5	8.5	9.5	9.5	9.0
ND9642-3Russ	6.5	7.5	7.5	8.5	7.0	9.0	9.5	9.5	10.0	10.0

1/ Severe Sloughing - 1; No Sloughing - 10
2/ Not Mealy - 1; Very Dry and Mealy - 10
3/ Poor Texture - 1; Good Texture - 10
4/ Dark - 1; Very White - 10
5/ Dark - 1; Very White - 10
6/ Poor Flavor - 1; Excellent Flavor - 10

OHIO

Alvin Mosley, F. I. Lower, E. C. Wittmeyer and W. A. Gould

Potato Cultivar Trials, 1977

Thirty four potato varieties and seedlings were evaluated in Ohio in 1977. Most of this work was done on commercial potato farms using commercial cultural and pest control practices. The work was sponsored by the Department of Horticulture and the Ohio State University in cooperation with the Ohio Potato Growers Association and seven commercial growers. Dr. Randall Rowe, Plant Pathologist, and David Kelly, Manager of the Association, also assisted, particularly at harvest.

State Wide Trial. Eight entries were evaluated on each six commercial farms across Ohio.

Location	Grower
1--Beach City	Becker's Falls Farm
2--Mantua	Frank Goodell & Sons
3--Hanoverton	Harold Thompson
4--Smithville	Galen Moomaw
5--Defiance	Chase Farms
6--Lisbon	Tritten Brothers

Each variety was replicated three times at each location; individual plots were double rows of 100 seed pieces. Twenty-five additional observational entries were evaluated at locations three and six. Plots for observational selections were double rows of fifty seed pieces.

Tubers were dug by machine, allowed to air-dry in the field for approximately thirty minutes, weighed and a sample of fifty pounds was then graded. A fifteen pound sub-sample from each major plot was chipped in the Horticultural Pilot Plant at Ohio State University. Only promising observational entries were chipped.

Results are summarized in tables one through three. Extreame variations in yield occurred for some of the entries, mainly due to weather conditions. Atlantic was among the three highest yielding lots on each farm and led the eight selections on the average. Line W 718, Snowchip, and Katahdin followed in the average results. These selections are usually found in the top yields. The other entries were W 721, ND8891-3, Norchip, and Superior.

Atlantic graded well but tubers with heat necrosis were found on two farms. Large tubers of both Atlantic and W 718 appeared to be susceptible to hollow heart in some locations and in some seasons. Line W 718 is attractive with large tubers but has rather low specific gravity. Apparently, it has field resistance to wilt. Snowchip is high yielding but the tubers tend to be rough with frequent low grades.

Early Market Trials. Nine potato varieties and seedlings were evaluated for late summer cropping at the Louis Huck farm at Marietta. Three of the entries were included in the main trials on the six farms, and five were also included in the observational trials on the two farms. Double row plots of 100 seed pieces were replicated three times. They were planted on April 14 in Wheeling gravelly loam and harvested on August 4 immediately after vines were shredded. The crop was grown using cultural and pest control measures common to the area.

Results are summarized in table four. Shurchip, W 710, and Atlantic responded equally in yield but W 710 had a higher percentage of U.S. No. 1 potatoes. This entry led in yield on this farm in 1975 and in 1976, but Atlantic was not entered in those years. Shurchip, a midseason variety in Ohio, is always in the top yields at this location. Apparently, tubers are formed early in the growth pattern.

Ohio Table 1. Average U.S. No. 1 yields in cwt. per acre of eight potato varieties and seedlings grown at six locations in Ohio--1977.

	LOCATION						
Entry 1/	1	2	3	4	5	6	Average
Atlantic	379	239	288	426	617	342	415
W 718	229	225	319	425	508	472	363
Snowchip	351	247	207	352	497	509	361
Katahdin	382	273	220	360	418	429	347
W 721	307	188	221	385	396	397	316
ND 8891-3	458	134	187	285	392	420	313
Norchip	328	145	222	269	399	413	296
Superior	295	102	254	229	315	406	267
Average	341	194	240	341	443	449	335

1/ Entries ranked according to average yields of all locations.

Ohio Table 2. Average percent stand, grade, tuber size, specific gravity and chip color at harvest of eight potato varieties and seedlings grown at six locations in Ohio--1977.

Variety	Percent Stand	Percent U.S. No. 1	Percent B Size	Percent Culls	Avg. Tuber Wt. Lbs. 3/	Specific Gravity 1/	Chip Color 2/
Atlantic	88	88	5.1	6.8	0.38	1.074	3.7
W 718	86	85	5.5	10.0	0.43	1.060	4.8
Snowchip	92	81	7.7	11.6	0.34	1.064	5.0
Katahdin	89	85	4.2	11.1	0.47	1.065	4.9
W 721	87	88	6.8	6.3	0.37	1.071	4.0
ND8891-3	85	76	5.3	17.6	0.44	1.062	4.7
Norchip	93	77	7.8	16.0	0.31	1.067	4.6
Superior	81	80	6.7	13.2	0.35	1.060	5.3
Average	87	82	6.1	10.3	0.39	1.065	4.6

1/ Potato hydrometer method.

2/ PC/SFA Color after harvest and before storage.
1= very white to 10 = very dark

3/ Average of 40 tubers taken at random.

Ohio Table 3. Average U.S. No. 1 yield, grade and tuber weight of twenty five potato varieties and seedlings grown in observational plots at two locations in Ohio--1977 1/

ENTRY	FARM 3 Cwt. per Acre	Per Cent U.S. No. 1	FARM 6 Cwt. per Acre	Per Cent U.S. No. 1	AVERAGE 2/ Cwt. per Acre	Per Cent U.S. No. 1	Av. Lbs. 40 tubers 3/
10 W 710	267	71	449	84	358	77	15.3
32 NDA8694-3			430	85			
31 NDA8451-3			355	75			
22 B6969-2	108	50	265	77	186	63	14.8
28 CA13	244	85	326	80	285	83	17.3
12 W723	310	88	453	87	382	87	15.1
26 CA46-11	246	84	366	81	306	82	20.2
11 Oneida	199	67	438	85	318	76	17.3
34 MS711-8			423	91			
30 CA11	274	84					
15 Russet Shurchip			492	95			
29 CA12	252	79	428	86	340	83	15.1
16 W726	264	83	456	91	360	87	18.7
13 Shurchip			523	93			
17 6CX6	254	88	463	92	359	90	14.1
20 Kennebec	217	73	484	81	350	77	17.7
14 AK37-19	375	89	503	88	439	88	18.3
18 NY61	298	79	487	84	392	82	12.7
19 NY59	313	90	504	95	409	92	18.3
21 FL162	218	85	414	89	316	87	16.9
23 B7583-6	179	82	407	90	293	86	16.6
24 B6987-29	200	73	446	86	323	79	22.9
27 CA55-24	294	88	479	89	386	89	18.2
33 MS706-34			361	86			
25 B8395-5	219	92	536	92	377	92	20.5
Average	249	81	437	87			

1/ Roughly listed in approximate order of maturity

2/ Average of both farms

3/ Average of 40 tubers taken at random

(For average tuber Wt. divide by 40. For example - 143 ÷ 40 = 0.36 19.5 ÷ 40 = 0.49. They will all be 0.30 to 0.70).

Ohio Table 4. Average percent stand, U.S. No. 1 yield, grade and tuber size of nine potato varieties and seedlings grown for late summer harvest at Marietta, Ohio--1977. (1)

Entry	Per Cent Stand	U.S. No. 1 Per Cent	U.S. No. 1 Yield Cwt./A	PERCENT Size B (2)	PERCENT Culls	Tuber (3) Lbs. Wt.
Shurchip	86	88	309	7.4	6.2	0.33
W 710	86	95	303	5.8	8.0	0.40
Atlantic	92	88	303	4.8	3.6	0.38
Superior	87	90	264	5.8	3.6	0.32
AK37-19	89	95	281	7.8	3.6	0.33
Anoka	88	91	227	6.1	5.8	0.33
W 723	87	92	245	11.0	2.4	0.30
Oneida	80	88	194	13.4	6.4	0.33
W 721	79	91	213	18.2	3.2	0.26
Average	86	90	260	9.4	4.8	0.33

1/ Planted April 14, harvested August 4.

2/ 1 7/8 inch screen.

3/ Average weight of 40 tubers taken at random.

VERMONT

By S. C. Wiggans, R. N. Jensen, W. R. Kelly, H. J. Murphy

During 1977, three potato variety trials were conducted in Vermont by the Plant and Soil Science Department of the University of Vermont, the Plant Pest Control Division of the Vermont Department of Agriculture, and the Plant and Soil Science Department of the University of Maine. These trials were located at South Brulington, Chittenden, and Elmore, Vermont. There were five replicates in a randomized block design at each location. Seed-pieces of all varieties were planted by hand. Seedpiece spacing was 9 inches apart, except Russet Burbank, which was planted 18 inches apart. These plantings were part of the Cooperative Northeast Region Potato Variety Trials conducted in cooperation with the National Potato Breeding Program.

The plots at South Burlington were planted May 26, killed by frost, and harvested October 4, 1977 (Table 1). Fertilizer was broadcast at 90-90-90 per acre and disked-in prior to planting. Potatoes were grown in a light, sandy soil. Weed control was good. The season was cool and dry. Irrigation was applied as needed.

The plots at Chittenden were planted May 20, killed September 19, and harvested October 6, 1977 (Table 2). Fertilizer was applied in the furrow at a rate of 140-210-210 per acre. Potatoes were grown in a loamy soil. The season was warm with an average rainfall for the location. Harvest was delayed about 10 days due to extremely wet conditions the last half of September.

The plots at Elmore were planted May 19, 1977. They were fertilized with 120-180-180 in furrow per acre. Potatoes were grown in a medium, loamy soil. The plots were not harvested for yield due to extremely wet conditions at harvest time.

Chip color indices for potato varieties in 1977 in the two locations which were harvested are given in Table 3.

The four highest yielding varieties at South Burlington were Atlantic, Green Mountain, Hudson, and Superior. The five highest yielding varieties at Chittenden were Atlantic, Katahdin, Kennebec, AF41-2, and CC26-1A. Atlantic was high yielding at both South Burlington and Elmore. It has a good appearance and good cooking qualities. Kinnebec performed very well at Chittenden and reasonably well at South Burlington.

Vermont Table 1. Yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, and total solids for 27 potato varieties grown at South Burlington, Vermont - 1977.

Variety[1]	Yield above 1-1/2 inches Cwt./A.	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific Gravity	Percentage total solids
Alaska Red	217	85.8	37.2	1.082	20.64
Atlantic	331	97.7	78.3	1.090	22.33
Bake King	253	96.5	61.8	1.086	21.48
Batoche	230	92.9	49.8	1.079	20.00
Belleisle	272	92.4	52.2	1.081	20.43
Bison	222	97.8	65.4	1.069	17.89
Campbell 12	260	95.2	58.0	1.072	18.53
Campbell 13	206	95.6	66.7	1.076	19.37
Cobbler	278	93.8	61.4	1.073	18.74
Green Mountain	303	94.7	51.8	1.094	23.17
Hudson	367	98.4	86.6	1.085	21.27
Katahdin	261	96.1	68.0	1.081	20.43
Kennebec	278	96.9	72.0	1.081	20.43
Norland	202	94.2	57.7	1.066	17.26
Penn 71	194	95.5	64.1	1.071	18.32
Russet Burbank	223	38.9% 4 to 10 oz. size		1.083	20.85
Snowchip	287	95.7	65.7	1.075	19.16
Superior	323	97.6	78.4	1.082	20.64
Tobique	230	97.4	76.5	1.083	20.85
AF41-2	267	91.7	72.6	1.080	20.21
AF186-2	247	94.4	55.4	1.093	22.96
B6503-2	263	97.6	66.7	1.083	20.85
B6987-2	270	97.9	79.1	1.073	18.74
B7583-6	240	47.6% 4 to 10 oz. size		1.087	21.69
BR6863-5	285	95.0	60.4	1.081	20.43
CA40-7	290	97.0	75.9	1.082	20.64
Bayes L.S.D. (0.05)	72			0.006	

1/ Planted - May 26; harvested - October 4, 1977.

Seedpiece spacing: Russet Burbank spaced 18 inches apart; all other varieties spaced 9 inches apart.

Fertilization: 90-90-90 broadcasted.

Vermont Table 2. Yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, and total solids for 19 potato varieties grown at Chittenden, Vermont - 1977.

Variety[1]	Yield above 1-1/2 inches Cwt./A.	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific Gravity	Percentage Total solids
Alaska Red	384	90.6	75.2	1.063	16.63
Atlantic	504	82.4	77.4	1.075	19.16
Batoche	384	93.2	82.5	1.063	16.63
Campbell 13	317	94.5	87.3	1.064	16.84
Cobbler	420	95.5	82.8	1.067	17.47
Katahdin	493	75.7	69.4	1.049	13.77
Kennebec	573	89.3	84.0	1.054	14.73
Tobique	418	93.5	86.9	1.065	17.05
AF40-9c	444	87.0	82.0	1.059	15.78
AF41-2	493	92.1	85.1	1.063	16.63
B6503-2	334	97.3	89.9	1.066	17.26
B6986-26	411	92.4	88.8	1.071	18.32
B7583-6	406	37.3% 4 to 10 oz. size		1.067	17.47
B7845-10	357	94.4	76.8	1.051	14.09
B8148-4	344	95.6	86.2	1.063	16.63
BR7104-10	389	91.3	84.3	1.061	16.21
C72107-13A	413	94.9	87.7	1.060	15.99
CA02-7	341	89.9	78.9	1.057	15.38
CC26-1A	463	93.6	87.9	1.068	17.68
Bayes L.S.D. (0.05)	94			0.009	

1/ Planted - May 20; killed - September 19; harvested - October 6, 1977.

Seedpiece spacing: Seedpieces of all varieties spaced 9 inches apart.

Fertilization: 140-210-210.

Vermont Table 3. Chip color indices for potato varieties grown at three Vermont locations - 1977.

Variety	Location and Chip Color[1]	
	South Burlington	Chittenden
Alaska Red	6.8	9.6
Atlantic	7.3	7.4
Bake King	7.2	
Batoche	8.6	8.8
Belleisle	7.3	
Bison	7.4	
Campbell 12	9.4	
Campbell 13	7.5	6.7
Cobbler	7.7	7.8
Green Mountain	8.9	
Hudson	9.2	
Katahdin	7.7	9.0
Kennebec	7.3	8.1
Norchip	7.0	
Norland	8.0	
Penn 71	6.3	
Russet Burbank	8.4	
Snowchip	7.5	
Superior	7.0	
Tobique	7.5	7.5
AF40-9c		6.5
AF41-2	8.2	6.0
AF186-2	6.5	
B6503-2	7.1	5.1
B6986-26		7.0
B6987-2	7.7	
B7583-6	8.5	9.0
B7845-10		8.2
B8148-4		7.5
BR6863-5	7.4	
BR7104-10		8.2
C72107-13A		7.7
CA02-7		8.4
CA40-7	8.8	8.0
CC26-1A		7.1
Bayes L.S.D. (0.05)	1.9	1.6

[1]Chips with lower indices are lighter in color.

VIRGINIA

Boyett Graves

Plot Culture. Potato seedlings and standard varieties were evaluated for adaptability, certain horticultural characters and chipping suitability in Advanced (5 replications), Intermediate (3 replications) or First Year Observational (18 hills) trials on the Eastern Shore of Virginia at Painter. Seedlings were obtained from potato breeding programs at USDA-ARS, Beltsville, Maryland, the Pennsylvania Agricultural Experiment Station, and Campbell Soup Company. Culture was according to local recommendations including 110 pounds per acre of N, P, and K band placed at planting; Furadan 10G at 30 pounds per acre banded at planting; and Sencor 1 1/2 pounds per acre. Plots were irrigated 4 times in May and June applying approximately 1 1/4 inches each time. Plots were planted March 17 and harvested July 5 and 6.

Weather Conditions. Excess rains in early March delayed planting. Rainfall was far below normal in April and May with only slight relief in June and below normal in July. Spring temperatures were somewhat above average with a soil temperature of 53°F at planting.

Program Objectives. Virginia grown potatoes are harvested from June 20 to August 15 and are important in the U. S. potato marketing system because they supply both table and chip stock during the three to four month period when northern grown, stored, potatoes are not available or are not very suitable for potato chips. Varieties in current usage in Virginia are harvested in an immature stage of growth. Slightly over 50 per cent are used for chips in the U. S. and Canada, 5 to 10 percent are exported to countries other than Canada; and the remainder utilized as table stock. None are stored for later sales.

Improved eye appeal in fresh market types including early physiological maturity for better skin set has been a major factor in seedling evaluations. Good chip color dependability is almost a must with moderate to high dry matter highly desirable. Yield equal to or better than current varieties and moderately high tolerance to air pollution are very important.

Progress toward achievement of these goals in the past five years has been considerable with the most gains being in the areas of better shape, uniformity of shape, eye depth, air pollution tolerance, specific gravity and chip color dependability.

Advanced Trials. This trial included the more adaptable selections from previous years' evaluations. B6987-29 (Belchip), Atlantic, C-11, Superior L, B7516-9, and Pungo were among the better yielding selections. B7516-9 and B6969-2 are two of the most promising seedlings; B6969-2 as an early, high-yielding possible replacement for Superior; and B7516-9 as a mid-season maturing possible replacement for Pungo in Virginia. Both selections are quite adequate for chipping and both offer improved eye appeal for market. Both have performed well at other testing locations along the U. S. east coast.

B8073-3 was a good yielding medium early selection with good air pollution tolerance, excellent eye appeal and good chip color. See Virginia Table 1.

Intermediate Trial. Most selections in this trial were grown in 18 hill, single replicate plots in 1976. B8501-10 was easily the most acceptable seedling in this trial, exhibiting good potential for yield, earliness, specific gravity, air pollution tolerance, tuber conformation and chip color. Most other seedlings exhibited some measure of unacceptability in one or more of these characters: yield, maturity, air pollution tolerance, and incidence of heat necrosis. (See Virginia Table 2.)

Observational Trial. These first year seedlings were grown in 16 - 20 hill, single replicate plots. One of the most outstanding features of this trial was the presence of only one seedling (B9020-23) that did not produce chips of acceptable color two days after harvest (See Virginia Table 3), and the fact that 28 of the 53 seedlings chipped made chips of the lightest color (rating of 1). Among the better seedlings with yields equal to or better than the standards were B8615-2, B8706-8, B8710-16, B9024-19, B8812-15, B9049-4, B8798-20, B8713-5, and B8901-6.

The seedlings in Virginia Table 3 represent less than one-half of those grown in this trial; the others being discarded prior to or at harvest for some horticultural character unacceptability such as poor vine type, severe air pollution injury, poor shape, etc. Approximately one-third of those in Virginia Table 3 will not be grown in the Intermediate Trial in 1978.

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INTERREGIONAL POTATO TRIAL

In 1978 an interregional trial was planned by cooperators in Florida, Virginia, New Jersey and USDA-ARS, Beltsville, Maryland, to test on a somewhat more uniform basis some of the better seedlings originating from the USDA Potato Breeding Program at Beltsville.

Yields of these selections are shown in Virginia Table 4. The best yielding selection, B7009-4 was dropped from the 1978 trial because of limited chipping qualities and sometimes poor shape observed in this and other tests at the cooperating stations. The second best yields were produced by B7516-9, a mid-season maturing selection with very white skin and generally good shape and eye appeal. This selection is a moderately good chipper but is somewhat lacking in specific gravity. Selection B7516-7 has shown less eye appeal than its sister seedling B7516-9 but has higher specific gravity. These two seedlings, B6987-29, and B6969-2 are to be included in the 1978 Interregional Trial along with the uniform check variety, Atlantic, and each location's own check varieties. B6969-2 was retained because it is very early, has exceptionally nice eye appeal, is a good chipper, and has reasonably good interregional adaptation from Florida to Maine. Chip color data are shown in Virginia Table 5.

Virginia Table 1. Advanced Trial. Yield, specific gravity, tuber size, maturity, tuber conformation, chip color, and air pollution reaction of potato selections at Painter, Virginia, 1977

Pedigree	Yield, Cwt/A[5]		Specific Gravity	Maturity[1]	Air Pollution[2]	Tuber Conformation[3]	Chip Color At Harvest[4]
B6987-29	330	a	1.088	7	6	7	2
C-11	328	a	1.080	7	7	7	3
Atlantic	326	ab	1.091	6	7	8	1
Late Superior	323	abc	1.082	6	8	6	3
Pungo	310	abcd	1.081	6	8	6	3
Superior	306	abcde	1.077	5	7	7	2
B7009-4	296	abcdef	1.074	8	7	6	8
B8091-8	293	abcdef	1.084	7	6	8	3
B7516-9	290	abcdef	1.076	7	8	7	4
B8073-3	287	abcdef	1.072	5	7	8	3
C-13	286	abcdef	1.081	8	7	8	5
B8443-5	279	abcdef	1.070	8	3	6	-
B6969-2	275	bcdef	1.075	4	6	8	3
B7744-5	271	cdefg	1.075	6	6	8	4
B7252-3	268	defg	1.073	6	8	8	4
B8480-3	266	defg	1.075	6	7	9	5
B7516-7	264	efg	1.084	6	6	6	3
LaChipper	264	efg	1.077	4	5	5	3
B8599-42	259	efg	1.068	5	5	8	2
B8477-4	259	efg	1.084	7	7	7	2
B8486-1	256	efg	1.079	6	7	7	2
B6503-2	254	fg	1.078	5	6	5	3
B8393-6	252	fg	1.078	9	7	6	3
Abnaki	252	fg	1.078	7	7	7	-
Buckskin	252	fg	1.080	8	8	6	2
Norchip	248	gh	1.084	6	7	6	2
B7863-5	248	gh	1.069	5	5	8	3
B8498-9	243	gh	1.076	5	6	6	3
B8123-12	221	ghi	1.077	7	5	5	2
B7583-6	196	hi	1.083	8	8	5	3
B7608-1	183	i	1.073	6	6	7	2

Footnotes at end of Table 3.

Virginia Table 2. Intermediate Trial. Yield, specific gravity, tuber size, maturity, tuber conformation, chip color, and air pollution reaction of potato selections at Painter, Virginia, 1977.

Pedigree	Yield, Cwt/A 5/		Specific Gravity	Maturity 1/	Air Pollution 2/	Tuber Conformation 3/	Chip Color At Harvest 4/
B8501-10	279	a	1.087	5	9	7	3
B8302-5	277	a	1.066	7	7	8	-
B8575-5	275	a	1.073	7	5	8	4
B8004-8	266	ab	1.067	6	3	9	3
Pungo	265	ab	1.084	5	7	7	3
Wauseon	255	abc	1.077	6	4	7	-
Superior	255	abc	1.081	4	7	7	3
CA 02-7	244	abcd	1.080	9	7	7	-
B8443-12	242	abcde	1.079	9	7	8	2
CC 06-5	239	abcde	1.080	7	4	8	3
CA 46-11	228	bcde	1.080	8	6	8	-
B8462-1	223	bcde	1.079	7	8	8	2
Norchip	222	bcde	1.087	4	2	6	3
CA 55-24	213	cde	1.082	7	6	6	4
B8375-7	211	cdef	1.064	8	3	9	4
B8497-36	209	cdefg	1.083	8	8	7	3
B8308-5	209	cdefg	1.080	4	2	8	-
CC 54-8	207	defg	1.088	8	6	6	3
B7888-9	203	defg	1.076	5	4	8	-
B8101-3	195	efg	1.082	6	6	6	3
B8218-4	189	fg	1.078	5	5	8	3
CD08-21	177	g	1.081	6	6	6	-
B8377-2	133	h	-	6	5	9	4
B8527-4	98	hi	1.073	4	2	8	-
B8545-18	89	i	1.076	6	3	7	-
B8348-1	73	i	1.078	6	5	8	3
Entries Below Not Included in Analysis of Variance							
B8683-3	188		1.081	8	6	7	-
B8683-5	268		1.076	7	4	8	-
B8685-4	285		1.086	8	7	8	3
B8685-5	218		1.081	5	3	8	-
B8681-5	259		1.099	9	7	8	4
B8392-5	257		1.088	6	6	8	5

Footnotes at End of Table 3

Virginia Table 3. Observational Trial. Yield, specific gravity, maturity, air pollution reaction, tuber conformation and chip color of selected potato seedlings grown for the first time at Painter, Virginia, 1977

Pedigree	Yield, Cwt/A 5/	Specific Gravity	Maturity 1/	Air Pollution 2/	Tuber Conformation 3/	Chip Color At Harvest 4/
B9104-3	355	1.060	5	4	8	1
B9096-6	352	1.068	8	4	7	2
B8695-5	334	1.069	4	4	7	1
B8713-24	322	1.087	8	7	8	1
B8615-2	318	1.088	5	5	8	1
B8706-8	314	1.076	5	7	7	1
B8710-16	313	1.086	7	7	8	1
B9024-19	313	1.080	7	7	8	2
B9020-23	311	1.080	8	7	7	6
B8812-15	310	1.074	7	6	8	2
9 CN-1	309	1.089	6	5	6	1
B9049-4	305	1.081	5	5	7	2
B8798-20	298	1.085	6	7	7	1
B9119-5	297	1.070	5	4	8	4
B8713-5	296	1.086	7	6	7	2
9 FH-1	292	1.093	6	6	6	1
B8901-6	293	1.071	7	5	7	2
B8755-3	285	1.084	6	5	8	1
B8907-3	283	1.074	8	6	8	1
B8477-10	279	1.080	8	7	7	2
B8697-34	277	1.081	8	8	7	1
8 YY-1	275	1.080	8	8	5	1
B8848-2	273	1.084	7	8	8	3
B9007-20	271	-	8	8	8	-
B9014-12	268	1.082	8	5	-	1
B8618-5	267	1.080	6	7	8	1
B8761-2	266	1.083	5	6	7	1
B9067-6	263	1.088	4	5	7	1
B8907-4	262	1.078	7	6	7	1
B8687-16	261	1.076	5	6	8	3
B8884-7	256	1.081	6	5	7	1
B9050-4	255	1.084	5	6	7	2
8 YY 3	254	1.079	7	8	5	2
8 NW-8	254	1.083	7	7	6	3
B8692-6	254	1.076	7	7	8	1
B8899-13	250	1.084	7	6	7	1
B9043-19	250	1.074	6	4	8	1
8 YW-1	244	1.093	8	9	6	2
B8433-4	243	1.070	6	5	7	2
B8477-10	241	1.085	8	5	7	1

(continued)

Virginia Table 3. (continued)

Pedigree	Yield, Cwt/A[5]	Specific Gravity	Maturity[1]	Air Pollution[2]	Tuber Conformation[3]	Chip Color At Harvest[4]
8 SA-1	241	1.083	9	8	6	3
B9041-15	239	1.060	5	6	7	2
8 XM-5	224	1.080	9	8	7	2
B9028-23	219	1.076	6	3	7	1
8 TW-2	215	1.103	6	7	6	3
B8559-6	209	1.086	8	7	8	2
B8598-9	208	1.069	6	8	7	1
B8559-5	204	1.084	6	5	8	1
B8832-3	203	1.087	5	6	7	2
B8598-5	200	1.072	7	8	7	1
9 CN-3	200	1.075	5	4	-	1
B8524-17	190	1.076	7	6	7	3
9 CO-1	178	1.073	5	5	5	2
9 OA-3	167	1.067	7	5	7	2
B6969-2	260	1.077				1
Pungo	309					
Norchip	183					
Wauseon	241					

[1] Maturity Rating: 1 = very, very early; 3-4 = early medium early (Superior); 5-6 = mid-season (Pungo); 6 = medium late; 7-8 = late; 9 = very, very late.

[2] Air pollution rating: 1-2 = dead or almost dead; 3-4 = severe injury; 5 = moderate injury, some lower leaves dead and considerable speckling and leaf curl; 6-7-8 = very little injury; 9 = no injury.

[3] Tuber Conformation of Attractiveness: 1-4 = very unattractive; 5-6 = barely acceptable; 7-8-9 = very nice to almost perfect. (Primary characters considered; shape, uniformity of shape, smoothness of shape, eye depth, smoothness of skin, absence of blemishes such as enlarged lenticles and color).

[4] Chip Color: 1-4 = very light color; 5 = barely marketable; 6-12 = brown to black. Chip color determinations made by Wise Potato Chip Company, Berwick, Pennsylvania.

[5] Yields followed by a letter in common are not significantly different; Duncans multiple range, 1% level.

Virginia Table 4. Interregional Trial. Yield, specific gravity, conformation and air pollution rating of selected potato seedlings and varieties in 4 states, 1977.[1/]

	Yield over 1 7/8"						Specific Gravity[2/]					Conformation[3/]					Air Pollution[4/]		
	Fla.	Va.	N.J.	Me.	Mean	Rank	Fla.	Va.	N.J.	Me.	Mean	Fla.	Va.	N.J.	Me.	Mean	Va.	N.J.	Mean
B6969-2	-	275	402	441	373	6	-	75	667	75	722	-	8	9	8	8.3	6	4	5.0
B6987-29	240	330	406	410	347	9	-	88	696	90	825	-	7	5	6	6.0	6	5	5.5
B7009-4	-	296	446	472	404	1	-	74	659	75	716	-	6	6	6	6.0	7	4	5.5
B7516-7	261	264	426	403	339	11	805	84	726	90	818	5.0	6	7	7	6.3	6	5	5.5
B7516-9	382	290	469	449	398	2	664	76	672	72	704	5.5	7	8	8	7.1	7	5	6.0
B7744-5	343	271	373	511	375	5	-	75	634	80	728	1.0	8	8	8	6.3	6	4	5.0
B8443-5	357	279	388[5/]	364	347	10	665	70	640	75	689	4.0	6	8	7	6.3	3	3	3.0
B8480-3	-	266	234[5/]	410	303	12		75	-	82	785	-	9	9	8	8.7	7	4	5.5
Pungo	325	310	-	457	364	8	734	81	-	86	801	3.8	6		4	4.6	8	-	8.0
Superior	266	306	448	464	371	7	753	77	676	79	747	7.5	7	7	6	6.9	7	5	6.0
Atlantic	358	326	473	410	392	3	847	91	794	95	875	6.2	8	8	7	7.3	7	5	6.0
Sebago	263	-	-	403	383	4	622	-	-	77	696	4.8	-	-	5	4.9	-	-	-
Mean																			
LSD .01		49	N.S.	55															
.05		37	N.S.	41															

1/Cooperators: B. Graves, Virginia Truck and Ornamentals Research Station, Painter, Va.; R. E. Webb (USDA, ARS) and Aroostock State Farm, Maine Agricultural Experiment Station, Presque Isle, Maine; J. Shumaker, Florida Agricultural Experiment Station, Hastings, Florida; J. Watts, Wise Foods, Berwick, Pennsylvania; M. Henninger, New Jersey Agricultural Experiment Station, New Brunswick, New Jersey.

2/1.0 omitted.

3/1.0 = very poor conformation, 9.0 = exceptionally nice conformation.

4/1.0 = complete death, 5.0 = some symptoms on upper leaves and death of a few lower leaves, 9.0 = no symptoms.

5/These selections grown in plots adjacent to Interregional Potato Trial plot in New Jersey.

Virginia Table 5. Interregional Trial, Chip color of potato clones grown in 4 states, 1977[1/]

	Chip Color Rating[2/]																
	At Harvest			1 Wk. After Harvest[3/]			2 Wks. After Harvest[3/]			3 Wks. After Harvest[3/]			8 Wks. After Harvest[4/]	Mean All Fries			Mean All Fries, All Locations
	Florida	N. Jersey	Virginia	Florida	N. Jersey	Virginia	Florida	N. Jersey	Virginia	Florida	N. Jersey	Virginia	Presque Isle, Me.	Florida	N. Jersey	Virginia	
B6969-2		2	3	-	3	4	-	3	2	-	3	3	2.0	-	2.5	3.0	2.8
B6987-29	3	1	2	2	2	1	3	2	2	1	3	3	3.8	2.3	1.6	2.0	2.2
B7009-4	-	3	8	-	5	3	-	5	5	-	4	2	1.0	-	4.3	4.5	4.0
B7516-7	4	2	2	2	3	1	5	3	1	3	3	3	2.5	3.5	2.3	1.8	2.7
B7516-9	5	2	4	3	3	1	5	3	3	2	2	4	1.0	3.8	2.4	3.0	2.9
B7744-5	-	3	4	-	4	5	-	4	4	-	4	4	2.5	-	3.8	4.2	3.7
B8443-5	1	-	-	2	-	-	3	-	-	1	-	-	3.5	1.8	-	-	2.1
B8480-3	-	-	5	-	-	5	-	-	5	-	-	5	4.0	-	-	5.0	4.8
Pungo	4	-	3	3	-	3	4	-	2	3	-	3	3.5	3.5	-	2.8	3.2
Superior	5	2	2	2	3	1	3	3	1	2	3	3	3.0	3.0	2.8	1.8	2.5
Atlantic	3	2	2	2	2	1	2	2	3	2	2	2	2.0	2.3	1.9	2.0	2.1
Sebago	4	-	-	2	-	-	2	-	-	1	-	-	2.0	2.3	-	-	2.2

1/Cooperators - See footnote 1/ under Virginia Table 4.

2/Chip Color: 1.0 = Very light chip color
5.0 = Undesirable but marketable
6.0-10.0 = Medium brown to black, all unmarketable

3/Stored at 70°F

4/Stored at 50°F

WASHINGTON

N. M. Holstad, R. Kunkel, R. C. Holland, W. M. Iritani and M. Martin

Potato Variety Trials

Three variety trials were conducted on the WSU Royal Slope Research Farm near Othello in 1977. Trials 1 and 2 consisted of small sized replicated plots and trial 3 consisted of large unreplicated plots. The seed of all the varieties tested was grown near Bellingham, Washington.

In trials 1 and 2 the plots were single rows, 28 feet long with 34 inches between rows and 8.2 inches between seed pieces. Every fourth row was planted to Russet Burbank. The two clones on each side of the row of Russet Burbank potatoes were compared with the Russet Burbank on a paired plot basis. Each clone was replicated four times.

Specific gravity was determined with a Potato Chip Institute potato hydrometer. Chip color was evaluated by cutting longitudinal center slices from five tubers and deep fat frying them at 375 F until bubbling ceased. The chip color was compared to the American Potato Chip Institute color chart. Values 1 - 7 were considered acceptable. Uniformity of chip color was rated on a scale of 0 to 4, zero being the most uniform.

Royal Slope Trial I (Table 1). Seed tubers of 51 clones and 6 named varieties were cut into about 2 ounce seed pieces and treated with Captan spray on April 19-20. They were planted on April 22. Fertilizer at the rate of 2080 lb of a 16-16-16 per acre (333 lb N, P_2O_5 and K_2O) was banded on each side of the seed piece at planting time. The vines were beaten off on Sept. 5 and the tubers were harvested on Sept. 7-9. Specific gravity determinations were made between Sept. 19-23. From each replication (100 per clone) 25 tubers were cut for hollow heart and brown center evaluations.

Royal Slope Trial II (Table 2). Seed tubers of 51 clones and 6 named varieties were cut into about two ounce seed pieces and treated with Captan on April 19-20. They were planted on April 26. Fertilizer at the rate of 2500 lb per acre of a 16-16-16 (400 lb of N, P_2O_5 and K_2O) was banded on each side of the seed piece at planting time. The vines were beaten off on October 12 and the tubers were harvested on Oct. 17-18. Tuber samples were stored at 50 F until October 24-28 at which time specific gravity and hollow heart determinations were made. The remaining tubers were stored at 45 F from Nov. 15 until Jan. 9-11 at which time they were chipped directly out of 45 F storage.

Royal Slope Trial III (Table 3). Seed of the most promising Clones were planted in large plots ranging from .016 to .045 acres in size. The seed was cut and treated with Captan on April 25 and planted with a picker planter on April 27. The plots were sidedressed with 150 lb N/acre from NH_3 about 5 weeks after planting, and in addition, 150 lb N, 300 lb P_2O_5, 500 lb K_2O, 22 lb ZnAs, and 2 lb Disyston per acre were sidedressed as suspension fertilizer about 6 weeks after planting. The tubers were harvested October 25 with a potato combine to test their resistance to mechanical damage. After weighing and grading, 6 to 8 cwt of tubers from each clone were placed into storage at 48 F to test for storability and reducing sugar accumulation. These are still in storage.

Large Seed Increase Plots. In past years seed stocks for the variety trials were increased in cooperation with R. C. Holland of the State Department of Natural Resources near Bellingham, Washington. In addition, in 1977, we started to increase seed of some of the more promising selections on a larger scale with the cooperation of several certified growers in Northwest Washington. The clones and varieties distributed for seed increase were:

A 503-42
A 5400-15
A 6135-4
A 6371-2
A 66122-3
A 66102-16
A 66107-51
A 6830-3
A 68113-4
A 69327-5
A 69657-4

B 6987-5(4)
B 6987-57
B 6987-184
B 6987-201
B 7024-81
B 7151-4
BR 7093-24
W 330-1
Snowchip
Pioneer

Washington Table 1. Royal Slope Farm Variety Trial I.[1/]

Selection	cwt/a		%1's		Sp. Gr.[2/]		%Hol. Heart		Tuber Type[3/]
	Clone	RB	Clone	RB	Clone	RB	Clone	RB	Clone
Snowchip	493	410	73	75	82	82	2	9	Ob, W
A 68587-3	485	476	64	54	80	82	1	7	L, R
A 69850-4	478	446	64	53	80	76	0	2	L, B
A 68588-16	476	363	79	49	78	81	1	2	L, R
Pioneer	468	422	72	49	77	79	1	0	L, Red
A 68710-5	463	501	60	57	82	82	1	1	Ob, R
B 6987-201	454	522	77	53	92	85	5	2	Ob, W
Kennebec	441	485	68	49	76	81	0	7	Ob, W
RB WA	430	430	52	46	79	82	6	3	L, R
B 7583-6	428	456	80	48	89	75	1	7	L, R
B 7589-6	427	472	80	47	86	81	6	5	Ob, W
A 63126-9	424	460	64	52	81	81	1	1	L, R
BR 7093-24	424	463	69	52	80	82	0	10	L, B
A 68113-4	423	428	66	54	80	83	0	2	L, B
A 5400-15	422	521	65	48	84	82	1	5	L, B
A 69657-4	411	463	64	54	86	80	0	1	Ob, B
B 7024-81	410	390	84	48	98	78	12	3	Ob, W
RB Montana	408	446	39	44	79	81	5	5	L, R
Norgold	404	423	82	52	78	80	6	2	L, R
A 503-42	400	452	74	49	79	81	7	3	Rd, W
B 7151-4	400	386	64	47	88	80	0	7	Ob, W
RB WA	400	362	54	50	80	80	4	3	L, R
W 373-2	398	419	75	53	77	76	9	1	L, R
WC 304-4	381	421	80	52	64	80	10	2	L, R
AK-25	379	475	71	45	76	81	2	3	Rd, W
A 69827-10	376	451	67	52	78	82	6	2	L, R
B 6987-57	372	445	69	50	95	80	11	5	Ob, W
A 70383-12	364	485	63	51	89	81	6	5	L, B
A 70430-2	361	458	74	52	80	80	5	6	L, R
B 7024-60	360	418	70	50	90	82	4	8	Ob, W
A 66107-51	356	463	75	51	75	79	1	1	Ob, R
A 70286-2	356	522	72	51	78	80	42	4	L, R
ND 6993-13	345	400	72	48	72	82	3	4	L, R
W 330-1	345	364	76	50	80	80	5	2	L, R
A 67142-1	341	448	73	49	78	83	1	8	Ob, W
AK 37-19	340	407	72	46	90	80	0	10	Ob, W
ATD 27-1	340	449	69	55	69	77	9	1	L, R
A 6135-4	338	397	68	51	80	81	0	6	L, B
A 69327-5	336	468	73	55	78	78	0	1	L, R
RB	336	434	53	57	80	80	4	3	L, R
NDA 8856-11	330	398	65	51	82	79	0	2	L, R
A 66122-3	328	437	63	52	76	84	1	2	L, R
BR 66265-5	324	492	73	51	80	84	6	5	Ob, W
B 6987-5	322	444	73	50	87	78	3	11	L, W
CD 138-3	321	393	61	50	82	82	7	1	Ob, W
A 66102-16	318	428	69	52	80	80	0	0	L, R
WC 420-1	318	464	49	49	73	80	0	5	L, R
A 69827-4	313	460	53	51	76	82	0	7	Ob, R

Washington Table 1, continued.

Selection	cwt/a		%1's		Sp. Gr.[2/]		% Hol. Heart		Tuber Type
	Clone	RB	Clone	RB	Clone	RB	Clone	RB	Clone
Butte	296	423	72	54	79	79	2	6	L, R
B 6987-184	296	401	72	56	85	78	19	1	Ob, W
A 6830-3	290	453	70	54	82	80	0	2	L, R
A 69827-2	280	456	60	52	75	80	2	3	L, Red
W 338-1	272	480	74	54	79	80	0	9	L, R
WC 285-18	272	420	70	47	82	80	1	4	L, R
A 66126-4	268	459	64	54	78	80	0	7	L, R
WC 314-2	268	475	58	50	86	84	0	4	L, R
WC 345-15	266	488	76	44	83	80	9	10	L, R
AK-28	264	415	64	50	81	83	0	3	Ob, W
A 70245-2	258	441	65	56	79	83	4	3	L, R

1/ Planted April 22, Harvested Sept. 7-9.

2/ 1.0 omitted.

3/ R=Russet, W=White, B=Buff, L=Long, Ob=Oblong, Rd=Round.

Washington Table 2. Royal Slope Farm Variety Trial II.[1/]

Selection	cwt/acre		%1's		Sp. Gr.[2/]		% Hol. Heart	Clone Chip Color[3/]	
	Clone	RB	Clone	RB	Clone	RB	Clone	Color	Uniformity
BR 7093-24	680	458	72	55	84	79	0	7.8	1.2
A 69850-4	625	547	70	53	73	78	0	5.5	1.2
A 68587-3	619	493	62	55	73	74	0	6.5	2.0
A 503-42	617	575	71	53	79	78	20	6.2	1.0
A 68113-4	593	539	64	59	78	75	0	6.6	1.0
B 7151-4	586	485	67	58	80	76	0	4.8	0.8
B 6987-201	582	484	74	53	83	79	0	4.3	1.0
AK 37-19	576	529	65	53	87	78	0	6.0	1.5
AK-25	574	465	75	58	77	77	0		
A 66107-51	573	481	58	51	73	77	0	8.0	1.6
Snowchip	567	535	72	61	80	74	0	5.0	1.0
B 7589-6	562	477	72	61	81	78	0	6.8	1.5
B 6987-184	561	529	72	52	89	77	15	5.4	1.7
Kennebec	561	566	60	53	73	78	0	5.0	1.0
A 69827-10	559	498	60	52	76	80	0	7.5	2.3
RB WA	559	570	54	54	77	77	0	6.6	2.3
A 63126-9	539	463	65	50	83	78	0	6.2	1.6
B 6987-57	529	469	74	61	85	77	5	5.6	1.3
B 7024-81	529	558	74	53	93	77	1	6.5	1.0
ATD 27-1	528	516	57	50	68	78	10	6.8	1.0
B 7024-60	526	525	66	59	83	77	5	4.2	0.5
A 70383-12	520	493	59	54	84	77	1	5.8	2.3
A 66126-4	518	512	61	55	75	76	5	7.0	1.5
A 5400-15	515	519	61	51	76	76	0	6.8	2.2
A 69827-4	514	478	50	60	72	78	0	7.0	2.2
RB WA	507	563	49	49	80	79	0	6.8	1.8
A 67142-1	506	506	72	44	80	80	5	5.3	1.3
A 6135-4	504	522	77	47	74	78	0	7.6	1.2
A 70286-2	504	538	66	53	78	78	0	6.4	1.2
RB Montana	504	533	56	50	82	77	0	6.6	2.5
A 68710-5	503	487	68	56	76	75	2	7.0	1.5
A 66102-16	497	511	66	53	80	77	0	6.5	1.0
B 7583-6	495	539	75	57	79	78	0	5.6	1.3
Norgold	492	566	69	58	67	78	5	8.0	1.0
A 68588-16	489	507	57	56	73	78	0	6.2	1.6
RB WA	489	481	54	54	77	76	0	6.0	2.0
A 70245-2	475	541	73	56	77	79	10	6.5	2.2
A 69657-4	471	495	73	57	73	78	0	6.6	1.0
WC 304-4	471	499	72	51	69	77	0	8.2	1.2
W 330-1	470	511	71	53	75	79	0	7.5	1.0
A 66122-3	468	463	62	59	78	77	0	5.5	0.6
A 69827-2	466	453	50	54	76	78	0	6.7	1.7
A 6371-2 (Butte)	445	518	62	57	80	79	0	7.8	0.3
Pioneer	445	569	74	49	69	79	0	7.1	2.0
B 6987-5(4)	441	511	70	55	90	79	5	5.6	1.3
A 70430-2	439	529	62	49	74	77	10	7.2	1.6
NDA 8856-11	414	491	66	52	73	75	0	7.3	1.0
A 6830-3	410	537	61	51	82	80	0	5.7	0.7
BR 6626-5	403	471	59	55	74	77	0	7.0	2.5

Washington Table 2, continued

Selection	cwt/acre		%1's		Sp. Gr.[2/]		% Hol. Heart	Clone Chip Color[3/]	
	Clone	RB	Clone	RB	Clone	RB	Clone	Color	Uniformity
A 69327-5	386	508	64	54	81	78	0	6.0	1.2
CD 138-3	385	557	44	53	77	79	0	6.6	2.3
ND 6993-13	379	491	75	55	77	79	0	6.6	2.3
AK-28	375	477	54	51	68	77	0	5.5	1.2
WC 285-18	367	488	60	55	76	76	0	6.9	1.0
WC 345-15	337	474	69	53	76	75	0	5.6	0.9
WC 420-1	324	478	74	57	68	76	0	7.8	2.0
W 373-2	323	518	67	53	77	78	0	5.5	0.3
W 338-1	313	555	74	51	71	81	0	7.0	1.3
WC 314-2	306	496	65	50	76	77	0	6.8	1.2

[1/] Planted April 26, Harvested Oct. 17-18.

[2/] 1.0 omitted.

[3/] Chip color 1 (lightest) to 10 (darkest).
Uniformity 0 (most uniform) to 4 (least uniform).

Washington Table 3. Royal Slope Farm Variety Trial III.[1/]

Selection	cwt/acre	Selection	cwt/acre
A 503-42	809	Butte	445
A 69657-4	565	R. Burbank	414
B 7151-4	565	AK-25	411
Snowchip	537	A 66122-3	410
A 5400-15	493	A 66107-51	405
A 68113-4	491	A 6830-3	404
B 6987-184	491	A 693262-5	397
B 6987-201	474	AK-28	389
B 6987-81	466	Pioneer	350

[1/] Planted April 7, Harvested Oct. 25.

WEST VIRGINIA

R. J. Young[1/], S. I. Pencis[1/], S. K. Bhatia[1/], and F. J. Alt[1/]

Multigenic Resistance to Potato Late Blight

Late Blight Trials 1977. This report presents the results of the 1977 multigenic late blight evaluation trial, see West Virginia Table 2. The test was conducted on a grower farm located in the Greenbrier River Valley near Marlington, West Virginia. The ground was spring plowed from sod and was classified as a light sandy river bottom loam of moderate fertility. The test area was flanked by the Greenbrier River on one side, and on the other by a field of corn. Being a river valley surrounded by steeply inclined slopes, natural dews tended to persist on the foliage well into the mid fornoon.

Test clones were hand planted into preformed furrows as single 2 to 8 hill plots. Fertilizer and systemic insecticide were encorporated in the furrows with a one row Iron Age potato planter.

Weather conditions during the period of June through September were favorable for excellent vine growth and tuber development. Further, frequent light rain showers accompanied by warm days (23C) and cool nights (10C) provided near ideal conditions for potato late blight development.

Details of the test

1) Sources of variety and seedling materials:
   a) Maine Potato Breeding Program, A. F. Reeves
   b) Campbell Soups Potato Breeding Program, R. L. Nickeson
   c) Northeast 107 Regional Project, H. Murphy
   d) New York Potato Breeding Program, R. L. Plastid
   e) USDA Potato Breeding Program, R. E. Webb
   f) West Virginia Potato Program, R. J. Young

2) Planting date - June 6, 1977.

3) Fertilizer - about 150# N as 10-20-20
   a) one half broacast and disced in
   b) one half applied in the furrow

4) Systemic insecticide - disyston 15 G 18-20# formulation per acre*

1/ Associate Plant Pathologist, Graduate Assistants, and Farm Manager respectively, West Virginia Agriculture Experiment Station.

* Plants did not receive any additional protective sprays.

5) Test clones were hand planted into preformed rows as single 2-8 hill sub plots.

6) Pentland Ace (R_3 Inoculator)
   a) Inoculated on July 22, 1977
   b) Phytophthora infestans (Race - 1,2,3,4)

7) Evaluations were based on the Barratt-Horsfall Grading System for measuring Plant Disease. Values found in the tables represent a mean of several individual plant readings.

West Virginia Table 1. Date of foliar evaluations and number of days after planting and inoculation with Race -1,2,3,4 of P. infestans.

Evaluated On	Days After Inoculation	Days After Planting
8/8/77	16	62
8/23/77	31	77
9/14/77	53	99
10/3/77	72	117

Summary late blight results - None of the clones tested in 1977 were comparable to Atzimba in foliage resistance. However, several clones expressed a moderate level of multigenic resistance to P. infestans. These lines in particular may be of some value to the potato breeding programs, note AF40-9c, AF201-4c, AF230-14c, L521-7 (NY59), as well as a number of West Virginia selections.

Potato Evaluation Trials

Potato Variety Trials 1977. Two separate variety trials were conducted on the West Virginia Agriculture Experiment Station Farm (W. Va. AES) at Reedsville, West Virginia. In both test, enteries were arranged in a randomized block design with 6 replications. In test one, 30 clonal selections were obtained from the NE-107 project with seed stocks grown at Sangerville Seed Farm. The results of this test are found in Tables 3 and 4. The second test included 30 selections from the W.V.U. potato program with seed stocks grown in Canaan Valley near Davis, West Virginia. The results of this test are found in Table 5.

The seed was hand planted into preformed rows on May 13, and 16, 1977 respectively. Within row seed piece spacing was about 10 inches, while row spacing was about 36 inches. One half the fertilizer requirement was broacast and plowed down, while the remainder was applied in the furrow. Disyston was also applied in the furrow at a rate of 20 pounds of product per acre - Manzate-200 and Lannate or Metasystox R were applied at weekly intervals beginning on July 21, and continued throughout the remainder of the growing season. Vines were sprayed with paraquot on September 2, and again on September 9. All tubers were harvested on October 13, 1977

and stored at approximately 50°F until graded.

Summary - Several clones from the NE-107 program appear promising for West Virginia. Of the 3 russet types evaluated, B7147-8 (260 CWT/A) was the best. Several round white selections produced excellent yields and attractive tubers. Seedling AF84-4 (415 CWT/A) produced highly attractive tubers but yielded marginal potato chips. Other seedlings which produced good yields and acceptable tuber types were B6529-12 (372 CWT/A), CA46-11 (352 CWT/A), B7848-2 339 (CWT/A), AF24-33c (319 CWT/A), and AF182-2 (314 CWT/A). Of the newer released varieties, Atlantic (493 CWT/A), Shurchip (431 CWT/A), and Campbell 11 (395 CWT/A) performed well.

Several of the West Virginia lines produced excellent marketable yields and good tuber types. Seedling BR5991-WV16 (368 CWT/A) produces a good round to oblong blocky tuber and has been introduced into the NE 107 system for extensive evaluation. Other W. Va. lines that produced good yields and tuber types are B6988-WV10 (351 CWT/A), B6949-WV3 (302 CWT/A), B6043-WV6 (289 CWT/A) and USDA Seedlings B6782-1 357 (CWT/A), and BR6291-19 (281 CWT/A).

West Virginia Table 2. Evaluation of Varieties and Seedling Clones for multigenic Resistance to Phytopthora Infestans Race-1,2,3,4. 1977.

FIELD NO. 1977	PEDIGREE	PERCENTAGE INFECTION 8/8/77	8/23/77	9/14/77	10/3/77
Maine Potato Breeding Program (A.F. Reeves)					
1086	Af40-9c	0	6.0	23.5	Dead
1087	AF84-4	59.5	94.0	Dead	-
1088	AF92-3	40.5	88.0	Dead	-
1089	AF125-15	40.5	Dead	-	-
1090	AF288-1	12.0	88.0	Dead	-
1091	AF295-10	6.0	40.5	Dead	-
1092	AF299-7	23.5	88.0	Dead	-
1093	C7266-8c	59.5	88.0	Dead	-
1094	C72107-13a	23.5	94.0	Dead	-
1095	C72107-15a	4.0	40.5	88.0	-
1096	C7415-3A	40.5	88.0	Dead	-
1097	C7416-3a	6.0	23.5	Dead	-
1098	C7424-3a	40.5	Dead	-	-
1099	C7442-3a	59.5	Dead	-	-
1100	CC53-8a	76.5	94.0	Dead	-
1101	CD73-21a	76.5	Dead	-	-
Campbell Soups Breeding Program (R. L. Nickeson)					
1102	BR7085-1	59.5	99.0	Dead	
1103	CD03-26	23.5	70.0	Dead	
1104	CD08-29	76.5	Dead	-	-
1105	CD37-3	40.5	59.5	Dead	-
1106	CD67-2R	40.5	Dead	-	-
1107	CD81-16	59.5	Dead	-	-
1108	C7212-2	76.5	99.0	Dead	-
1109	C7212-4	59.5	94.0	Dead	-
1110	C7215-12	88.0	Dead		-
1111	C7216-6	59.5	98.0	Dead	-
1112	C7218-11	40.5	98.0	Dead	-
1113	C7220-10	76.5	Dead	-	-
1114	C7220-11	76.5	Dead	-	-
1115	C7221-7	59.5	98.0	Dead	-
1116	C7227-17	40.5	Dead	-	-
1117	C7227-28	40.5	Dead	-	-
1118	C7227-30	59.5	Dead	-	-
1119	C7227-32	76.5	Dead	-	-
1120	C7227-37	23.5	Dead	-	-
1121	C7232-4	40.5	Dead	-	-
1122	C7232-7	40.5	Dead	-	-
1123	C7232-25	40.5	Dead	-	-
1124	C7236-2	40.5	99.0	Dead	-
1125	C7251-7	6.0	69.0	Dead	-
1126	C7265-24	12.0	50.0	Dead	-
1127	C7285-10	59.5	Dead	-	-

West Virginia Table 2. Continued

FIELD NO. 1977	PEDIGREE	PERCENTAGE INFECTION 8/8/77	8/23/77	9/14/77	10/3/77
Campbell Soups Breeding Program (R. L. Nickeson) Continued					
1128	C7292-1	40.5	96.0	Dead	-
1129	C7294-10	59.5	Dead	-	-
1130	C7296-5	23.5	59.5	Dead	-
1131	C7298-8	23.5	98.0	Dead	-
1132	C72121-4	40.5	99.0	Dead	-
1133	AF41-9c	23.5	98.0	Dead	-
1134	AF201-4c	23.5	25.0	Dead	-
1135	AF204-5c	76.5	Dead	-	-
1136	AF230-14c	12.0	17.0	Dead	-
1137	AF239-4c	12.0	83.0	Dead	-
1138	AF238-7c	59.5	98.0	Dead	-
NE-107 Selections (Hugh Murphy)					
1481	ATLANTIC	76.5	98.0	Dead	-
1469	BELLEISLE	NO GERMINATION-		-	-
1466	CAMPBELL 11	88.0	98.0	Dead	-
1460	CAMPBELL 13	59.5	Dead	-	-
1485	GREEN MTM.	40.5	69.0	Dead	-
1477	HUDSON	12.0	94.0	Dead	-
1500	I. COBBLER	59.5	94.0	Dead	-
1459	KATAHDIN	40.5	76.5	Dead	-
1467	KENNEBEC	23.5	70.5	98.0	Dead
1501	MONONA	76.5	98.0	Dead	-
1492	NORCHIP	76.5	91.5	Dead	-
1498	NORLAND	50.0	91.5	Dead	-
1465	PENN 71	23.5	83.0	Dead	-
1470	RARITAN	76.5	88.0	Dead	-
1462	R. BURBANK	23.5	76.5	Dead	-
1539	SEBAGO	23.5	76.5	98.0	Dead
1483	SHURCHIP	40.5	59.5	Dead	-
1464	SUPERIOR	50.0	98.0	Dead	-
1507	WAUSEON	88.0	Dead	-	-
1490	WISECHIP	59.5	91.5	Dead	-
1463	AF24-33c	40.5	83.0	Dead	-
1489	AF41-2	NO GERMINATION-		-	-
1474	AF84-4	31.0	91.5	Dead	-
1463	AF186-2	23.5	88.0	Dead	-
1561	B6139-11	17.0	31.0	Dead	-
1488	B6503-2	59.5	Dead	-	-
1480	B6529-12	23.5	76.5	Dead	-
1495	B6986-26	88.0	Dead	-	-
1482	B6986-137	59.5	Dead	-	-
1531	B6987-29	17.0	91.5	Dead	-
1487	BR7093-20	91.5	Dead	-	-

West Birginia Table 2. Continued

FIELD NO. 1977	PEDIGREE	PERCENTAGE INFECTION 8/8/77	8/23/77	9/14/77	10/3/77
NE-107 Selections (Hugh Murphy) Continued					
1473	BR7093-48	23.5	91.5	Dead	-
1471	B7147-8	59.5	91.5	Dead	-
1486	B7196-74	40.5	Dead	-	-
1479	B7583-6	38.0	76.5	Dead	-
1484	B7629-1	23.5	76.5	Dead	-
1476	B7845-10	23.5	96.0	Dead	-
1461	B7845-23	76.5	Dead	-	-
1468	B7848-2	31.0	88.0	Dead	-
1487	BR8663-5	76.5	99.0	Dead	-
1472	CA46-11	23.5	91.0	Dead	-
1497	F67062	88.0	-	-	-
1491	47156	40.5	83.0	Dead	-
New York Potato Breeding Program (R. L. Plastid)					
1558	K349-7	59.5	83.0	98.0	Dead
1559	L521-5	40.5	76.5	Dead	-
1560	L521-7	6.0	31.0	99.0	Dead
West Virginia Potato Breeding Lines					
1503	ALAMO	23.5	96.0	Dead	-
1143	ATZIMBA	2.0	0.0	12.0	50.0
1532	CALROSE	TRACE	6.0	23.5	94.0
150	IRISH COBBLER	23.5	98.0	Dead	-
1504	KATAHDIN	20.0	73.0	Dead	-
1505	KENNEBEC	15.0	63.0	Dead	-
1536	ONAWAY	40.5	88.0	Dead	-
1537	ONTARIO	10.0	69.0	88.0	-
1538	PENCHIP	0.0	0.0	76.0	Dead
1539	SEBAGO	23.5	76.0	98.0	Dead
1540	SUPERIOR	45.5	97.0	Dead	-
1507	WAUSEON	88.0	100.0	Dead	-
USDA Breeding Lines					
1499	B5090-11	9.0	50.0	Dead	-
1555	B5141-6	6.0	96.0	Dead	-
1556	B5398-4	6.0	31.0	Dead	-
1561	B6139-11	17.0	35.0	Dead	-
1557	B6330-3	23.5	35.0	50.0	Dead
1528	B6782-1	6.0	23.5	88.0	Dead
1529	BR6255-1	23.5	88.0	Dead	-
1530	BR6291-19	37.0	97.0	Dead	-

West Virginia Table 2. Continued

FIELD NO. 1977	PEDIGREE	PERCENTAGE INFECTION 8/8/77	8/23/77	9/14/77	10/3/77
West Virginia Breeding Lines					
1496	B3682-WV1	12.0	40.0	94.0	Dead
1508	B3720-WV4	17.0	23.0	94.0	Dead
1509	B5264-WV6	12.0	70.0	90.0	Dead
1510	B5662-WV4	1.0	8.5	31.0	Dead
1493	B5662-WV13	12.5	35.0	92.0	Dead
1511	BR5991-WV16	5.0	41.0	98.0	Dead
1512	BR5991-WV21	2.0	17.0	88.0	Dead
1543	B6026-WV5	8.5	17.0	20.0	88.0
1544	B6028-WV6	12.0	17.0	23.5	Dead
1545	B6039-WV2	0.0	0.0	6.0	19.0
1546	B6039-WV6	10.0	23.5	54.0	Dead
1547	B6039-WV9	2.0	0.0	40.5	Dead
1513	B6043-WV6	1.0	8.5	60.0	Dead
1548	B6086-WV21	0.0	0.0	76.5	Dead
1549	B6653-WV7	12.0	23.5	72.0	Dead
1550	B6655-WV1	6.0	50.0	88.0	Dead
1551	B6667-WV1	2.0	12.0	12.0	76.5
1514	B6928-WV14	6.0	17.0	94.0	Dead
1552	B6935-WV2	6.0	23.5	Dead	-
1515	B6949-WV3	10.0	40.0	94.0	Dead
1516	B6949-WV6	1.0	23.5	60.0	Dead
1517	B6949-WV7	12.5	50.0	Dead	-
1553	B6960-WV2	23.5	23.5	40.0	97.0
1554	B6964-WV3	6.0	10.0	32.0	98.0
1518	B6975-WV1	12.0	23.5	60.0	Dead
1519	B6981-WV1	2.0	0.0	60.0	Dead
1506	B6981-WV2	40.5	98.0	Dead	-
1520	B6981-WV3	12.0	76.5	Dead	-
1521	B6988-WV5	2.0	18.5	24.0	98.0
1522	B6988-WV6	6.0	40.5	Dead	-
1523	B6988-WV10	40.5	96.0	Dead	-
1524	B6988-WV15	1.0	12.0	76.5	99.0
1525	B6992A-WV6	4.0	31.0	Dead	-
1526	B6994-WV2	6.0	33.0	Dead	-
1527	B7019-WV1	76.5	100.0	Dead	-

West Virginia Table 3. Yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, total solids, and late blight ratings for 30 potato varieties grown at Reedsville, West Virginia - 1977.

Variety[1]	Yield Cwt./Acre	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific Gravity	Percentage total solids	Late Blight Ratings[2]
Atlantic	493	76.7	65.4	1.079	20.00	5.0
Belleisle	156	81.4	73.0	1.063	16.63	---
Campbell 11	395	84.9	76.8	1.075	19.16	5.0
Campbell 13	284	76.5	64.3	1.067	17.47	5.0
Green Mountain	407	74.7	64.0	1.074	18.95	5.0
Hudson	415	66.9	62.2	1.061	16.21	5.0
Katahdin	480	70.3	64.2	1.061	16.21	5.0
Kennebec	526	62.7	55.0	1.066	17.26	4.8
Penn 71	450	71.6	65.4	1.065	17.05	5.0
Raritan	456	72.1	60.9	1.079	20.00	5.0
Russet Burbank	445	73.6	63.6	1.071	18.32	5.0
Shurchip	431	85.8	76.3	1.059	15.78	5.0
Superior	387	85.5	75.5	1.065	17.05	5.0
AF24-33c	319	85.3	71.0	1.080	20.21	5.0
AF84-4	415	69.0	64.1	1.068	17.68	5.0
AF186-2	314	87.1	68.3	1.078	19.79	5.0
B6139-11	489	73.4	62.4	1.077	19.58	5.0
B6529-12	372	69.5	60.0	1.063	16.63	5.0
B6987-29	387	89.1	71.5	1.071	18.32	5.0
B6986-137	248	83.2	62.9	1.081	20.43	5.0
B7147-8	260	85.1	75.4	1.069	17.89	5.0
B7196-74	302	77.9	68.5	1.062	16.42	5.0
B7583-6	362	76.5	70.3	1.070	18.10	5.0
B7629-1	444	64.7	61.1	1.062	16.42	5.0

West Virginia Table 3 - continued

Variety[1]	Yield Cwt./Acre	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/2 to 4 inches	Specific Gravity	Percentage total solids	Late Blight Ratings[2]
B7845-10	255	78.0	63.7	1.063	16.63	5.0
B7845-23	222	85.7	73.2	1.067	17.47	5.0
B7848-2	339	85.2	74.6	1.071	18.32	5.0
BR7093-20	243	80.3	73.0	1.071	18.32	5.0
BR7093-48	272	69.8	66.4	1.064	16.84	5.0
CA46-11	352	75.0	64.1	1.068	17.68	5.0
Bayes L.S.D. (0.05)	56			0.005		

[1]Planted - May 13; killed - September 2; harvested - October 13, 1977.

Seedpiece spacing: Seedpieces of Russet Burbank, B7147-8, B7196-74, and B7583-6 spaced 12 inches apart. All other varieties spaced 10 inches apart.

Fertilization: 142-80-80 broadcasted plus 50-100-100 banded in rows.

[2]Rating scale: 1 = none; 5 = completely dead.

West Virginia Table 4. Chip color indices for 30 potato varieties grown at Reedsville, West Virginia - 1977.

Variety	Chip Color[1]	Variety	Chip Color[1]
Atlantic	6.6	B6139-11	7.4
Belleisle	7.8	B6529-12	7.3
Campbell 11	5.8	B6987-29	6.3
Campbell 13	7.1	B6986-137	6.2
Green Mountain	9.4	B7147-8	7.4
Hudson	8.6	B7196-74	7.8
Katahdin	7.4	B7583-6	7.5
Kennebec	7.4	B7629-1	8.4
Penn 71	6.5	B7845-10	7.5
Raritan	8.1	B7845-23	7.9
Russet Burbank	7.6	B7848-2	7.9
Shurchip	7.6	BR7093-20	5.4
Superior	7.5	BR7093-48	6.8
AF24-33c	6.8	CA46-11	7.4
AF84-4	7.5		
AF186-2	6.1	Bayes L.S.D. (0.05)	0.8

[1]Chips with lower indices are lighter in color.

West Virginia Table 5. Yield of US No. I tubers, and percentage of yield between 1-7/8 and 4.0 inches; and 2-1/2 to 4.0 inches for 30 potato varieties grown at Reedsville, West Virginia - 1977.

Pedigree	CWT/Acre[1/]	Percentage of yield 1 7/8-4.0 inches	Percentage of yield 2.5" - 4.0"
BR5991-WV16	368.4 a	77.7	69.6
B6782-1	357.3 ab	82.4	75.3
B6988-WV10	351.0 ab	88.3	78.5
B6981-WV2	339.9 abc	83.0	73.0
Alamo	315.9 abcd	77.3	71.1
B6949-WV3	302.2 abcd	64.4	61.6
BR5991-WV21	301.7 abcd	80.9	74.4
B6043-WV6	289.6 bcde	71.3	62.4
BR6291-19	281.5 cde	83.3	71.8
B6975-WV1	275.7 cde	83.6	73.6
B7019-WV1	271.5 cde	82.1	74.4
Katahdin	270.2 de	61.6	57.9
B6992A-WV6	266.1 def	81.6	76.3
B6928-WV14	264.9 def	81.6	74.4
Kennebec	262.0 def	61.8	57.8
B6988-WV8	261.8 def	81.0	73.3
B6994-WV2	255.9 def	63.8	59.2
B6981-WV3	252.3 defg	78.4	68.5
B6988-WV6	248.0 defg	70.0	63.1
Wauseon	228.9 efgh	76.2	68.3
BR6255-1	222.0 efghi	69.6	65.1
B6988-WV5	198.5 fghij	70.8	57.7
B6949-WV7	186.0 ghij	75.0	69.9
B6988-WV15	184.5 ghij	72.8	60.9
B3720-WV4	166.7 hij	69.8	62.0
B6935-WV2	160.9 hij	70.5	62.1
B6981-WV1	159.8 ij	66.3	58.1

West Virginia Table 5 - continued

Pedigree	CWT/Acre 1/	Percentage of yield 1 7/8-4.0 inches	Percentage of yield 2.5" - 4.0"
B5662-WV4	151.5 ij	81.0	61.4
B6949-WV6	141.4 j	58.1	54.3
B5662-WV4	138.2 j	76.0	68.3

1/ Yield in CWT/Acre of 1-7/8" - 4.0", Treatments sharing a common letter are not significantly different at the 0.01 level.

FLORIDA

J. R. Shumaker, D. P. Weingartner, James Watts, and Raymon E. Webb

Variety and Seedling Trials

Methods. Potato varieties and seedlings were tested for their adaptability, desirable horticultural characteristics, and resistance to tuber symptoms of corky ringspot (CRS) and brown rot (*Pseudomonas solanacearum*) diseases at the Agricultural Research Center, Hastings, Florida. Clones were grown in either advanced (four replications), intermediate (two or three replications), or observational (one replication) trials. Depending on the nature of the test (Procedures, Florida Tables 1-6) soil fumigation was applied as follows. In-the-row application of preplant Telone (8 gpa) or preplant Telone plus band (8 to 10 inches) application of Temik (3.0 lb ai/acre) at planting. Yield and tuber appearance and disease ratings were taken at harvest. Tuber samples were shipped to Berwick, Pennsylvania, for specific gravity and chip color evaluation.

Advanced, Intermediate, and Observational Yield and Quality Tests (Florida Tables 1-5). Several clones produced yields of high quality tubers equal to or greater than those produced by the standard cultivar, Sebago. Atlantic was again the outstanding entry in these tests. Atlantic will be widely grower tested in 1978 (over 1,500 acres). Some of the most promising round, white clones to be advanced tested in 1978 are Late Superior, B6969-2, B6987-29 (Belchip), B7139-4, B7516-9, B7859-2, B8392-5, B8687-20, B8692-3, B8706-8, B8761-2, and B8907-4. Late Superior, B6987-29 (Belchip), and B6969-2 will be widely grower tested in 1978. The two most promising long, russet clones were B7147-8 (BelRus) and B7583-6. They will be grower tested in 1978.

Intermediate Corky Ringspot and Tuber Brown Rot Evaluations (Table 6). Forty cultivar and seedling selections were evaluated for resistance to southern bacterial wilt and tuber brown rot caused by *Pseudomonas solanacearum* and corky ringspot disease (CRS) caused by tobacco rattle virus (TRV). Incidence and severity of both diseases were assessed at harvest. Incidence of tuber brown rot was too low to effectively assess disease resistance. Twenty-five of the clones tested illustrated positive external and/or internal (i.e. typical arcing necrosis) tuber symptoms of CRS. In addition, six clones illustrated attypical scattered necrosis (i.e. diffused necrosis) in the pith which may be attributed to other causes as well as TRV.

The selections B7863-5, B7902-4, B7583-6, B7147-8 (BelRus), B8285-3, B8288-6, B7154-6, B7863-5, CA61-3, CC54-8, and CC05-17 have been unaffected by CRS in at least one additional season during 1974-77. Low levels of CRS were observed in B6987-29 in 1974 and in B8392-5 in 1975.

Florida Table 1. Results from 30 clones selected for advance yield and quality testing at Hastings, Florida--1977.

Clone	YIELD			Tuber appearance 1/	Specific Gravity	CHIP COLOR 2/ Weeks after harvest				
	US1A	Total size 'A'	Grand total			1	2	3	4	Mean
		cwt/acre								
Atlantic D	358	359	376	6.2	1.0847	1	2	3	1	1.8
B7139-4	352	354	361	5.5	1.0688	5	1	1	1	2.0
B8392-5	348	350	357	5.0	1.0781	5	3	3	3	3.5
Wauseon	344	347	367	6.0	1.0621	1	2	3	2	2.0
Hudson	342	345	363	2.2	1.0644	3	5	3	5	4.0
Atlantic B	340	344	366	5.8	1.0732	5	5	3	1	3.3
Viking	335	335	346	4.5	1.0710	2	2	2	2	2.0
B8185-6	327	329	359	3.2	1.0777	4	4	5	5	4.5
Pungo	325	329	349	3.8	1.0734	4	3	4	3	3.5
BR7093-23	324	331	344	6.0	1.0755	1	1	2	1	1.3
B7151-4	316	318	332	5.8	1.0803	3	2	2	4	2.8
B7592-1	315	318	335	6.2	1.0710	2	2	3	3	2.5
B8497-36	310	313	333	6.5	1.0734	2	2	2	2	2.0
Late Superior	308	312	326	7.0	1.0757	5	2	6	2	3.8
La Chipper	306	308	333	5.2	1.0731	3	2	3	3	2.8
B8393-6	301	307	332	4.5	1.0755	4	3	5	5	2.5
Norchip	295	297	322	6.5	1.0723	3	2	2	1	2.0
Red La Soda	293	297	309	3.2	1.0665	5	5	-	-	---
B7595-7	292	297	333	3.0	1.0737	4	5	5	3	4.3
B7621-9	282	286	297	5.5	1.0688	3	2	5	5	3.8
CC05-17	282	284	294	7.2	1.0800	2	1	2	5	2.5
La Rouge	280	281	313	2.5	1.0689	4	3	-	-	---
ND7715-7R	277	279	295	5.5	1.0600	3	3	5	3	3.3
Superior	266	271	283	7.5	1.0753	5	2	3	2	3.0
Sebago	263	265	289	4.8	1.0622	4	2	2	1	2.3
B7516-7	261	276	284	5.0	1.0805	4	2	5	3	3.5
AF-25-18C	261	263	294	5.0	1.0708	5	3	3	3	3.5
CC08-3	244	249	269	2.5	1.0708	2	3	4	4	3.3
CD34-2	234	235	241	6.2	1.0798	2	4	4	4	3.3
PA6CX-6	187	188	199	5.2	1.0872	4	2	2	2	2.5
LSD 0.05	65	64	62	1.6						
0.01	86	86	82	2.1						

1/ From 9.0 = most desirable to 0.0 = completely undesirable.

2/ Chip Color 1-4 = acceptable; 5 - borderline; 6-9 = too dark for use.

PROCEDURES: Soil fumigation = 8 gpa preplant Telone + 3 lb ai/A Temik in-the-row at planting. Replications = 4. Plot = 20 hill units (20ft.). Planted = 2/16/77. Harvested = 5/23/77.

Florida Table 2. Results from 97 clones selected for intermediate yield and quality testing at Hastings, Florida--1977.

Clone	Yield U. S. Size 'A'	Yield Grand Total	Tuber Appearance 1/	Chip Color 2/	Specific Gravity
	cwt/acre				
B6951-1	325	344	6.5	-	-
B7154-6	357	382	4.5	-	-
B7188-56	299	332	2.0	-	-
B7516-9	382	398	5.5	3.8	1.0664
B7603-9	110	123	6.5	-	-
B7744-5	343	363	1.0	-	-
B7664-2 (2569)	286	306	4.5	-	-
B8123-11	240	262	2.5	-	-
B8288-6	220	248	1.0	-	-
B8318-4	231	280	2.0	-	-
B8424-15	332	366	5.0	1.8	1.0713
B8427-8	297	330	3.0	-	-
B8428-10	332	357	6.5	2.3	1.0686
B8443-5	357	370	4.0	1.8	1.0665
B8462-1	282	324	5.0	-	-
B8477-4	269	282	5.5	1.8	1.0710
B8480-1	231	259	6.0	-	-
B8501-10	274	287	4.5	-	-
B8509-15	294	337	5.0	-	-
B8514-18	260	267	8.0	-	-
B8530-7	197	259	1.0	-	-
B8543-9	237	254	3.5	-	-
B8578-4	282	307	2.5	-	-
B8579-1	235	282	4.0	-	-
B8590-5	226	248	7.0	-	-
B8614-10	200	227	2.0	-	-
B8615-2	296	322	4.5	-	-
B8625-11	293	328	4.0	-	-
B8683-5	185	205	7.5	-	-
B8685-5	314	338	7.5	2.3	1.0713
B8687-20	335	353	8.0	1.3	1.0732
B8690-2	243	261	4.5	-	-
B8692-3	341	370	6.5	2.0	1.0777
B8692-6	295	309	4.0	-	-
B8692-12	326	346	6.5	2.5	1.0758
B8695-5	286	299	5.5	-	-
B8697-29	251	284	1.5	-	-
B8697-34	316	353	1.0	-	-
B8706-8	354	368	6.0	1.3	1.0711
B8710-6	279	306	7.0	-	-
B8713-21	297	323	2.0	-	-
B8713-24	374	397	6.0	1.5	1.0689

Florida Table 2. (Continued)

Clone	Yield U. S. Size 'A'	Yield Grand Total	Tuber Appearance 1/	Chip Color 2/	Specific Gravity
	cwt/acre				
B8715-6	223	252	7.0	-	-
B8745-1	268	282	5.0	-	-
B8751-1	242	257	5.0	-	-
B8751-6	314	328	6.5	2.0	1.0692
B8755-3	342	360	6.5	2.3	1.0756
B8757-2	222	245	4.5	-	-
B8757-7	314	341	3.0	-	-
B8758-2	291	314	5.5	2.5	1.0669
B8761-2	380	399	5.5	1.8	1.0753
B8763-14	184	195	4.0	-	-
B8769-5	327	346	7.0	2.0	1.0667
B8771-7	238	254	5.5	-	-
B8783-6	240	271	7.5	2.0	1.0803
B8783-8	282	316	5.5	2.5	1.0676
B8798-16	231	269	4.5	-	-
B8798-18	235	254	6.5	-	-
B8798-20	233	242	7.5	-	-
B8799-8	203	221	8.0	-	-
B8799-13	347	366	6.0	2.5	1.0756
B8799-16	321	334	7.5	2.5	1.0748
B8812-3	382	402	4.0	1.8	1.0755
B8812-4	285	305	7.5	-	-
B8812-10	298	337	3.5	-	-
B8812-15	303	340	3.0	-	-
B8822-9	316	351	2.0	-	-
B8822-25	204	233	3.5	-	-
B8822-29	252	273	3.5	4.0	1.0805
B8823-9	314	337	7.0	1.8	1.0758
B8833-6	261	303	5.5	1.5	1.0758
B8881-10	348	377	4.5	-	-
B8881-16	270	290	5.0	2.5	1.0690
B8887-1	253	295	4.5	-	-
B8898-1	188	225	6.5	-	-
B8899-13	348	378	6.0	2.0	1.0710
B8907-4	399	410	6.5	2.3	1.0714
B8908-3	243	261	1.5	-	-
B8911-4	219	244	1.5	-	-
B8918-2	217	258	1.0	-	-
B8921-1	220	267	1.0	-	-
B8922-6	246	259	2.0	-	-
AF-24-33C	222	240	3.5	-	-
BR6626-5	306	329	5.5	3.0	1.0688

Florida Table 2. (Continued)

Clone	Yield U. S. Size 'A'	Yield Grand Total	Tuber Appearance 1/	Chip Color 2/	Specific Gravity
	cwt/acre				
BR6862-2	301	323	4.0	-	-
C7227-32	355	369	6.0	3.8	1.0603
CA02-7	390	402	6.5	1.7	1.0598
CC06-5	279	296	3.5	-	-
CD03-24	240	254	7.5	-	-
CD08-21	227	243	4.0	-	-
CD106-16	223	234	2.0	-	-
CD85-11	248	268	6.5	-	-
CD137-5R	302	321	1.5	-	-
CD138-4R	289	304	3.0	-	-
CD139-9	335	355	3.0	-	-
Sebago	293	311	5.6	2.0	1.0644
Pungo	320	341	2.7	2.5	1.0713
Atlantic B	397	412	5.4	1.5	1.0757

1/ From 9.0 = most desirable to 0.0 = completely undesirable.

2/ Chip Color 1-4 = acceptable; 5 = borderline; and 6-9 = too dark for use. Mean of 4 chipping determinations.

PROCEDURES: Soil fumigation = 8 gpa preplant Telone + 3 lb ai/A Temik in-the-row at planting. Replications = 2. Plot = 20 hill unit (20 ft.). Planted on 2/16/77. Harvested on 5/24-25/77.

Florida Table 3. Results from 9 white clones selected for advance yield and quality testing at Hastings, Florida--1977.

Clone	YIELD			Tuber		CHIP COLOR 2/				
		Total	Grand	appear-	Specific	Weeks after harvest				
	US1A	Size 'A'	total	ance 1/	Gravity	1	2	3	4	Mean
		Cwt/Acre								
Atlantic	342	342	357	7.2	1.0828	3	2	2	2	2.3
B7859-2	329	336	358	5.8	1.0825	1	1	3	3	2.0
B7930-2	327	332	347	7.8	1.0758	3	3	3	3	3.0
B7828-13	316	322	347	7.5	1.0755	4	5	5	5	4.8
B7845-14	287	291	310	8.0	1.0711	5	4	4	6	4.8
B7845-19	252	267	284	5.8	1.0753	5	4	4	6	4.8
B7902-4	237	250	261	7.2	1.0732	6	3	4	5	4.5
B7866-3	236	239	245	6.8	1.0662	3	2	4	4	3.3
B7848-23	225	227	265	4.5	1.0758	3	2	2	3	2.5
LSD 0.01	82	80	85	2.1						
0.05	60	59	63	1.5						

Florida Table 4. Results from 13 russet clones selected for advance testings at Hastings, Florida--1977.

Clone	YIELD			Tuber		CHIP COLOR 2/				
		Total	Grand	appear-	Specific	Weeks after harvest				
	US1A	Size 'A'	Total	ance 1/	Gravity	1	2	3	4	Mean
		Cwt/Acre								
Norgold 110-N	314	321	348	5.8	1.0668	5	-	-	-	---
Norgold 35-N	293	296	320	6.5	1.0644	7	-	-	-	---
Norgold 10-N	291	302	331	6.0	1.0646	4	-	-	-	---
B7583-6	291	295	317	6.2	1.0781	4	5	5	4	4.5
Norgold M-N	286	289	320	6.5	------	-	-	-	-	---
CD130-7R	278	280	300	5.2	1.0731	3	2	2	2	2.3
B8314-5	273	273	290	6.0	1.0646	4	2	3	2	2.8
B8285-3	252	254	285	7.0	1.0770	5	5	6	5	5.3
B7160-4	244	246	276	5.2	1.0731	1	2	3	3	2.3
Centennial Russet	241	244	277	6.0	1.0710	2	3	4	2	2.8
Norgold Russet-USDA	240	240	261	6.0	1.0644	6	5	7	6	6.0
B7147-8	223	226	248	7.0	1.0756	1	2	3	1	1.8
Norgold H-N	210	214	248	6.8	1.0647	-	-	-	-	---
LSD 0.01	54	55	53	NS						
0.05	41	41	40	NS						

1/ From 9.0 = most desirable to 0.0 = completely undesirable.

2/ Chip Color 1-4 = acceptable; 5 = borderline; 6-9 = too dark for use.

PROCEDURES: Soil fumigation = 8 gpa preplant Telone + 3 lb ai/A Temik in-the-row at planting. Replications = 4. Plot = 20 hill units (20ft.). Planted = 2/16/77. Harvested = 5/24-25/77.

Florida Table 5. Results from 17 clones selected for observational yield and quality testing at Hastings, Florida--1977.

Clone	YIELD			Tuber appearance 1/	Specific gravity	CHIP COLOR 2/ Weeks after harvest				
	US1A	Total size 'A'	Grand total			1	2	3	4	Mean
		cwt/acre								
Pa 8TW-2	228	266	280	5	1.0666	1	2	2	1	1.5
Pa 8YW-1	228	228	250	6	1.0758	3	1	2	3	2.3
Pa 8YY-1	297	297	308	5	1.0690	1	1	2	1	1.3
Pa 8YY-3	185	185	197	7	1.0686	1	2	3	1	1.8
Pa 9CN-3	321	325	366	6	1.0688	1	1	1	1	1.0
Pa 9FH-1	267	267	282	7	1.0781	2	1	1	1	1.3
Pa 9CO-1	349	367	423	4	1.0735	5	4	4	5	4.5
Pa 8SA-1	233	251	267	6	1.0753	5	2	3	3	3.3
Pa 8MW-8	263	272	305	7	1.0756	3	2	3	3	2.8
Pa 8YW-1	320	320	338	6	1.0776	2	2	3	1	2.0
Pa 8XM-5	297	297	309	7	1.0755	3	2	3	3	2.8
Pa 9AO-3	259	259	270	7	1.0643	2	3	3	2	2.5
Pa 9CN-1	215	227	242	4	1.0779	1	1	1	1	1.0
B8499-6	221	231	330	5	------	-	-	-	-	---
B8945-1	274	291	329	1	------	-	-	-	-	---
B8947-3	336	344	355	7	1.0712	2	3	4	3	3.0
B8999-10	280	286	309	4	------	-	-	-	-	---
Sebago	329	329	350	6	1.0644	2	1	2	3	2.0
Atlantic	396	405	428	6	1.0732	5	3	3	2	3.3

1/ From 9.0 = most desirable to 0.0 = completely undesirable.

2/ Chip Color 1-4 = acceptable; 5 = borderline; 6-9 = too dark for use.

PROCEDURES: Soil fumigation = 8 gpa preplant Telone + 3 lb ai/A Temik in-the-row at planting. Replications = 1. Plot = 20 hill units (20 ft.). Planted = 2/16/77. Harvested = 5/23/77.

Florida Table 6. Results from 40 clones selected for intermediate corky ringspot (CRS) and brown rot disease testing at Hastings, Florida--1977.

Clone	Yield		External Tuber Ratings 1/		No. of Tubers 2/ with Internal		Internal Necrosis: Pattern (P) 3/ and (or) Diffused (D)
	US1A	Grand Total	Brown Rot	Corky Ringspot	Brown Rot	Necrosis	
	cwt/acre						
Atlantic	272	286	9.3	9.7	0.0	3.5	D & P
B6987-29	240	250	10.0	10.0	0.0	1.7	D & P
Atlantic B	238	254	10.0	10.0	0.7	4.3	D & P
CC05-17	201	205	10.0	10.0	0.0	0.0	-
Late Superior	174	186	8.7	10.0	0.3	0.3	P
B7859-2	173	193	10.0	10.0	0.0	2.0	D & P

Florida Table 6. Continued.

Clone	Yield		External Tuber Ratings 1/		No. of Tubers 2/ with Internal		Internal Necrosis: Pattern (P) 3/ and (or) Diffused (D)
	US1A	Grand Total	Brown Rot	Corky Ringspot	Brown Rot	Necrosis	
	cwt/acre						
B6987-29	169	182	10.0	10.0	0.0	0.3	D
B6951-1	161	172	10.0	9.7	0.0	0.3	D
B6955-35	159	169	10.0	10.0	0.0	2.7	P
B7902-4	157	167	9.7	10.0	0.0	1.7	D
B7516-7	146	151	10.0	10.0	0.3	0.0	-
Pungo	145	178	9.7	10.0	0.0	0.0	-
Sebago	140	153	10.0	8.3	0.0	2.6	P
CD 34-2	139	152	10.0	8.7	0.0	2.5	P
B7845-14	133	146	9.7	9.7	0.0	1.0	P
CA 61-3	131	146	10.0	10.0	0.3	0.3	D
B8314-5	131	139	10.0	10.0	0.0	1.7	D & P
B7888-9	130	142	10.0	10.0	0.0	3.0	-
CC 54-8	123	133	9.3	10.0	0.0	0.0	-
B7863-5	123	133	10.0	10.0	0.0	1.0	D
B7845-19	122	134	10.0	10.0	0.0	0.5	P
Superior	120	132	10.0	10.0	0.0	0.0	-
Hudson	117	127	9.0	9.0	1.0	0.5	P
B8185-6	117	137	10.0	10.0	0.0	0.3	D & P
B7154-6	112	128	10.0	10.0	0.0	1.0	D
B7188-56	112	156	10.0	10.0	0.0	0.3	P
B7160-4	108	131	10.0	10.0	0.0	1.0	D & P
B8392-5	105	111	-	-	-	-	-
B7595-7	104	127	10.0	9.7	0.0	0.0	-
B7848-23	102	135	10.0	10.0	0.0	1.3	P
B8123-11	96	107	10.0	10.0	0.0	0.3	P
B7957-5	92	112	10.0	10.0	0.0	4.5	P
Sebago	91	102	10.0	8.7	0.0	3.5	P
B7583-6	90	99	10.0	10.0	0.0	0.0	-
B8393-6	87	99	10.0	10.0	0.0	2.3	D & P
B7147-8	82	103	10.0	10.0	0.0	0.7	D
AF25-18C	79	90	10.0	10.0	0.0	0.7	P
B8288-6	71	74	-	-	-	-	-
B7845-29	70	92	10.0	10.0	0.0	1.7	D & P
B8285-3	68	86	10.0	10.0	0.0	0.0	-
LSD 0.01	86	88					
0.05	65	66					

1/ From 10.0 = no disease symptoms to 1.0 = most severe (100%).

2/ No. of tubers with disease symptoms taken from a 10 tuber sample.

3/ Pattern (P) = internal CRS disease symptom.

PROCEDURES: Replications = 3. Soil fumigation = one replication treated with 8 gpa of Telone, remaining replications were not treated. Plots = 20 hill units (20 ft.). Planted = 2/16/77. Harvested 5/25/77.